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Article I.—AN OUTLINE OF FIFTEENTH CENTURY ENGRAVING IN GERMANY.

The last half of the fifteenth century may be said to approximately include the rise and perfection of German line engraving on metal, and, except for a few noted pieces, its boundaries may be used to define an equal epoch in the history of wood engraving.

The Master of 1446 gives us our earliest dated metal plate, and the summit of technical execution is found in Durer's "Adam and Eve" in 1504."

In wood engraving, with the exception of certain impressions, such as the "Buxheim St. Christopher" of 1423, the "Brussels Virgin" of 1418, and the "Paris Passion," said to be of 1406, the commencement and a large part of the progress of the art is to be traced in the same half century.

It is not uninteresting, therefore, to sketch briefly the antecedents and growth of engraving in this important period, to

note the names of its most distinguished practicers, its characteristics of motive and expression, its excellencies, and its defects.

Etching, as distinguished from line engraving, cannot here be made the subject of criticism, although a few etched plates by Durer may be claimed in the last years of the century, but in the other branches of the art, and, within the limits of the assigned time, the painstaking care of Van Mecken, the calm and mystic spirituality of Schongauer, the invention of Wolgemuth, and the devout gravity of Durer found full expression.

Engraving during this period possesses the interest which attaches to an art which is original, and not merely imitative. In the following century, and largely to the present day, the process has been used to reproduce the masterpieces of painting; but the users of the knife and burin in the fifteenth century portrayed their own original conceptions.

Their themes were, it is true, few and often familiar, but their methods of representation, though based on traditional types, bore, each, the impress of an individual mind.

Interest attaches to these early prints, also, from the fact that the artists bring naturally and vividly before us the feelings, beliefs, passions, habits, costumes, and mode of living of their own time. No artist was then an archæologist seeking with laborious research to depict the characters of bye-gone ages with the proper features or costumes of race or period. Each painter or engraver thought and spoke, through his art, of the past as though it was being re-enacted in the present, and this habit perhaps gave a reality to scenes of religious history, which modern art fails to convey.

It is not to be forgotten that "engraving had an immense share—a share second only to letter press printing—in the popular education of Europe, and especially of Northern Europe, in the age of the Renaissance and the Reformation." And its importance was not only objective, but subjective also, for being "both subtle and forcible in its effects it demanded in the artist the highest qualities of patience and of manual training and power."

Passing now to the particulars of the art, let us sum up briefly our knowledge of the earliest beginnings of engraving.

The Buxheim St. Christopher, 1423.

It is well known that the art of chasing on metal dates from prehistoric times, but the art of engraving for the purpose of taking and multiplying impressions on paper or similar fabric can be traced with certainty no earlier than the fifteenth century.

Obvious, as the process now seems to us, it is related that accident alone gave it a beginning in Italy. It was the Florentine goldsmith's delight to produce the work called "niello," consisting of engraved sunken designs on metal, into which, when finished, was poured the tough and nearly indestructible enamel termed "nigellum." In the process of tracing these designs it was of course desirable to ascertain accurately how the work progressed, and the cumbrous practice existed of taking casts of the work in its incipient stages in fine clay, which were then reversed in sulphur, and the lines filled with black to bring out the pattern.

Chance revealed the fact that by filling the lines of the original design with oil and lampblack an impression might be taken directly on damp linen or paper, and this simple method soon superseded the older and more complicated process.

In Italy our earliest print is one of these "niello" trial pieces—the impress of a "Pax" engraved between 1450 and 1452, for the Church of St. John at Florence, by Tomaso Finiguerra. In this celebrated design of the "Coronation of the Virgin" the figures are full and rounded, the facial expressions various, and the fall of the draperies easy and natural. The advanced character of the execution forbids the prevalent impression of Finiguerra's position as an originator of his art, but the reversed position of the figures and of the inscription proves that the plate was not originally designed as one from which prints were to be taken.

It is doubtful whether a similar accident gave rise to the art in Germany, although German "nielli" of archaic type are not unknown. There, however, wood engraving seems to have the precedence in date. Our earliest wood-cut illustration whose date is generally conceded (1423) is the celebrated and familiar "St. Christopher" in Earl Spencer's library at Althorp. This famous print was found in 1769, pasted in the cover of a fifteenth century manuscript, by Heineken, the Keeper of the Dres-

den prints, at the Chartreuse Convent of Buxheim. Priority is disputed with this principally by the print known as the "Brussels Virgin" of 1418, found at Malines, in 1844, in the cover of an old chest; but the jealous critics do not agree in regard to the genuineness of the assigned date in the inscription. The National Library of Paris boasts of two prints to which the date of 1406 may with probability be assigned, but upon external and purely circumstantial evidence.

Turning attention now to the early German engravers we are reminded of the large class of early prints by the "anonymous masters" or "monogramists," preceding, perhaps, the productions of known artists. The mention of the masters of 1446, of 1451, of 1464, or of the "Banderoles," of 1466, the master of the letters M. Q. and he of the Gothic letters 𝔈. 𝔖. calls up the curious story of many rare or even unique prints. It is a commentary upon the value of fame and of the most careful endeavors to preserve it, that so large a number of impressions have descended to us, bearing the stamp of individual hands and often carefully designed cyphers or trade marks, and quite often a recorded date, yet the names of their designers have either wholly perished or are preserved only in faint and varying traditions.

Most of these "masters" indicate by their handiwork an early stage of the engraver's profession. The disappearance of their names may be thought to argue no recognized or immediate novelty in the art they practiced; yet it is not to be denied that nearly all the examples of these early masters show traces of the goldsmith's hand. A tendency of shading to parallelism in the lines, unmarked by cross-hatchings (which was a treatment used by niello workers) is almost universal, as is also an archaic draughtsmanship both in figure and perspective.

A strongly marked example of the method of shading spoken of is, however, found, in the comparatively late Italian prints of Mantagna (1431–1503), but this is an exceptionally late preservation of the method, and the master of 𝔈. 𝔖. shows the prevailing practice in Germany in the middle of the century. The works of all the anonymous masters are pervaded with a purely Gothic feeling, marked by mannered and ungainly figures, and draperies fluttering in sharp angular folds; de-

Sampson and the Lion.

Master of Gothic Letters E. S. or 1466.

Solomon worshiping his Idols.

Master of Gothic Letters E. S. or 1466.

The Organ Player.

Israhel Van Meckenen.

Portrait of Israhel Van Meckenen and his wife.

rived, it is said, from the little lay figures dressed in crumpled garments of paper, applied in a wet state and afterwards dried, which formed the models of the day.

Passing now from the anonymous masters we approach the first well-known name of the century; Israhel Van Mecken, or Meckenen. This artist flourished probably at Malines between 1440 and 1503.

His treatment of his subjects is plain and unimaginative, but he has drawn the ungainly Flemish figures of the period with scrupulous fidelity, and his portrayal of scenes of domestic life carries us back with vivid feeling to the homes of the artist's century. Among the well-known prints of this artist the series of the "Passion" strongly illustrates the artistic skill and spirit of the age. The weak figure of the Christ, devoid of all nobility and betraying only an overcharged expression of anguish, is surrounded by soldiers in strained attitudes of exertion; the contortion of their features being apparently intended to represent the atrocity of their conduct.

An interest attaches to this early artist from our possession of his portrait engraved by his own hands. The lines of his face indicate the dull mind but earnest and patient purpose which has left to us about 270 separate products of his burin.

We next meet with a name which reveals to us a new personality, Martin Schongauer of Colmar.

As an engraver he is the best of his time. He exhibits a mastery of his art and a freedom with its instruments theretofore unknown. The harsh outlines and rough shadings of his predecessors are now mellowed by a facile practice, and he impresses us with the delight with which he imitates nature even in her smallest details; the curling leaves of the lily, and the rough bark and feathery sprays of the palms are depicted with pleasure, and we can not but feel that the animated and expressive gestures of the little angels who flutter in interested action in his religious pieces suggests a firm and loving belief in the tending care of ministering spirits. Thus we may note the grace with which the lower cherub in the "Flight into Egypt" bends the palm and peers around to see if Joseph reaches the fruit, or again the rapt expression of devotion in

the "Crucifixion" with which some of the angels catch the drops of sacred blood from the sufferer upon the cross.

There is in Schongauer a tone of mystic spirituality which moves us like that of the early school of Cologne. The gentle sweetness of St. Agnes, the patient nobleness of the Virgin in the "Flight" convey to us ideas of calm and sincere devotion as does no other art, north of the Alps, in this pre-reformation century.

But Schongauer still retains many of the defect of his age. His total failure in perspective and his mannered attitudes in the "Charge of St. James of Compostello" remind us that art is still in its swaddling clothes, and that even its best professors are children learning its rules. The lengthened and emaciated figures with awkward feet and long bony hands tell us that the Renaissance is but dawning, and that traditional types have not yet given way before the accurate study of nature. But we feel that the spirit that impelled Schongauer was not that of display of personal skill, but rather that of sacrifice, and as in his well-known print of the "Tribute of the Kings," he pictures the offering of gold and frankincense and myrrh to the infant Christ, we feel that it is Schongauer himself who consecrates his best endeavor to the Holy Child. The spirit of the Giottesque school seems to have crossed the Alps and Fra Angelico's calm and yet ecstatic fervor glows in the plates of the master of Colmar.

But we must pass on to a still greater name, greater in bold and original invention, and according to the latest research as great in technical skill—Michael Wolgemuth of Nuremberg—forever immortalized in his still greater pupil, Albert Durer.

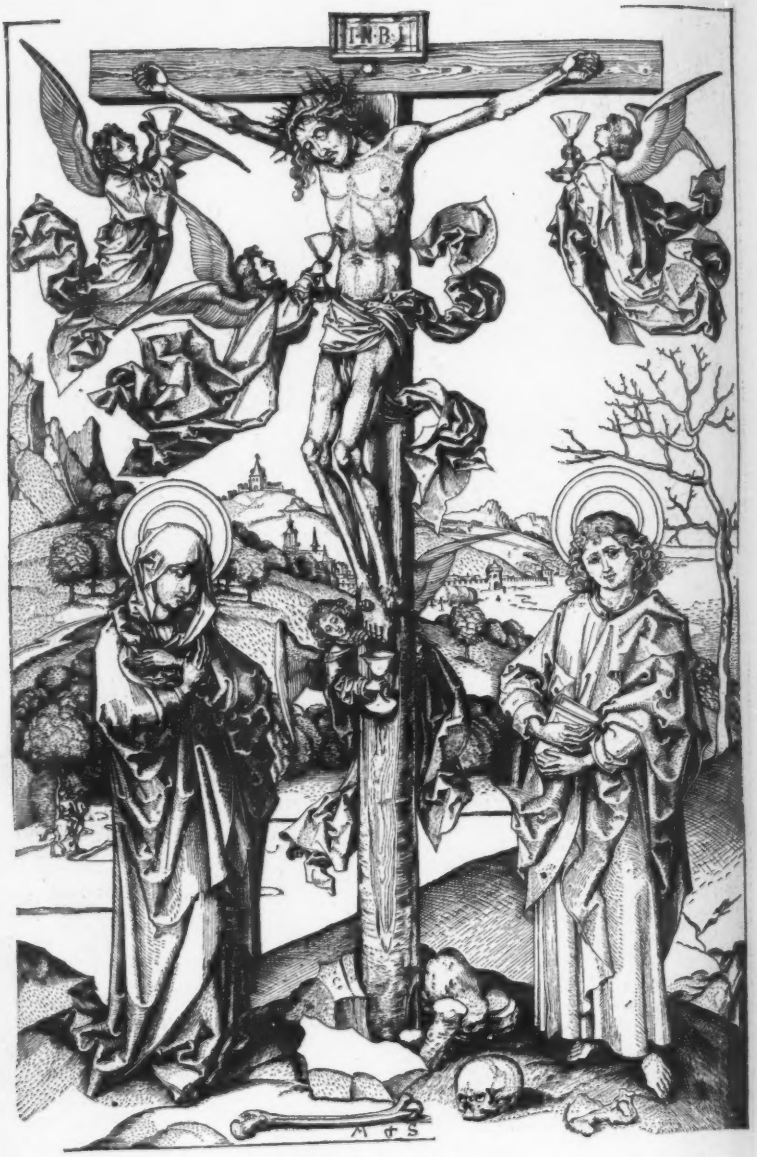
Wolgemuth's fame has till recently rested chiefly on his wood-cuts, and notably on his illustrations of the "Schwatzbehalter" and the "Nuremberg Chronicle."

In these, notwithstanding the sometimes primitive grotesqueness of the designs, and clumsy cutting, there is, as has been said, "an immense progress in freedom and aptness of expression.

The learned keeper of the Cambridge prints thus vigorously describes what he terms "the singular and moving mixture of the noble and the grotesque" in a subject, which is explained

The Flight into Egypt.

Martin Schongauer.



The Crucifixion.

Martin Schongauer.

The Tribute of the Rings.

Martin Schongauer.

The Annunciation.

Wolgemuth or Wenzel.

in the text of the "Schatz-behalter" to represent Christ voluntarily embracing and taking unto himself Death. "Christ," says he, "has sought out death in the midst of an open place; his looks are those at once of a redeemer's commiseration and a martyr's resolve; ordinarily it is death, himself, who chooses his own victim, to waylay him; this time it is one stronger than he who advances in unheard of free submission; and at the supreme surrender the fiend himself is awed into solemnity. The two approach each other with deliberation, and with something of ceremony; Christ gently draws to himself the abhorred monster, who, with no forwardness or rudeness, returns the embrace." "Few inventions in art are more simply daring, or better expressed with rougher means."

But Wolgemuth is not now known to us only as a designer on wood. The ingenuity of Professor Thausing of Vienna, seconded by that of Professor Colvin, has, within the last few years, assigned to Wolgemuth a considerable number of rare prints, signed by a W, and hitherto generally attributed to Wenzel, a goldsmith of Olmutz.

The unique print of the "Annunciation," which has been lately reproduced, exhibits a just perspective, a careful shading, a noble disposition of draperies, and a skill and interest in depicting details of the household, which is fully worthy of Durer. It is a curious fact that a number of Durer's most celebrated early prints are found duplicated over this same signature of W. The great "Hercules," the "Anymone," the "Couple Walking with Death behind a Tree," the "Dream of Love," are of this number.

While W was supposed to be the obscure goldsmith of Olmutz, these duplicates have been categoried among the copies of Durer; but it has now been pointed out that some of them are superior to the corresponding productions of Durer, and that in the case of the "Couple Walking," the position of the figures in the respective prints is reversed, and that Durer's picture is probably the copy.

Sufficient probability, on the whole, concedes these prints to Wolgemuth, and it is added that "the discovery seriously detracts from Durer's achievements, for it shows that he was

indebted to his master for the designs of nearly all his prints in the Italian manner."

But we must pass on to the last, and notwithstanding what we have said, the greatest name of all, Albert Durer, the great master of Nuremberg, who stands utterly alone in supreme and mysterious thoughtfulness. It is, however, only his earliest prints that the period can claim, for his activity extends far into the succeeding century.

Durer began to work about 1493, and in wood cutting his fame was established in 1498 by his great design of the "Apocalypse," indicating, as it did, the advent of a climax of power and character.

In metal plate his engraving of the "Adam and Eve" of 1504, one of his earliest dated prints, was regarded by him as his best work; and in purity and simplicity of design, and perfection of technique, his opinion is justified by subsequent criticism. Still those prints of Durer from metal plates to which may be fairly assigned a date as early as 1504, evince a far different spirit from the products of his riper years. The question of chronology of Durer's undated prints is a subject involved in much obscurity. By some the "Woman with the Wildman" is regarded as his earliest effort, by others the "Holy Family with the Butterfly," and it is true that these plates indicate only a clever 'prentice hand. The "Four Naked Women" has the earliest impressed date, 1497; but the style of this piece is superior to many undated and presumably earlier specimens. Perhaps as a general rule the prevalent opinion may be followed of assigning to a date prior to 1504 those prints of Durer's in which the initials of his name, arranged in cypher, are small and light, and occupy a central position at the bottom of the picture, as distinguished from those in which the cypher accompanies a date or occupies a tablet which is treated differently in different prints. Among the early prints may be numbered the "Anymone," the "St. Jerome in the Wilderness," the "Prodigal Son," the "Virgin with the Monkey," the "Dream of Love," the "Couple Walking," and the "Men at Arms." It is to be noted that none of these pieces involve the high and weird imagination which pervades acknowledged works of the master's maturity.

St. Jerome in the Wilderness.

Albert Durer.

Melancholia.

Albert Durer.

The not improbable argument above suggested makes the first six mere copies of plates of Wolgemuth or Wenzel, and it is perhaps true that the "Men at Arms" is imitated from a similar print by the master M. Q.

Of all of these prints the "St. Jerome in the Desert" is perhaps the nearest to the spirit of the following decade. The sombre, religious abstraction of the Saint is finely contrasted with the artist's evident pleasure in a not ignoble landscape. Even at the date of the "Adam and Eve" the deep and fantastic spirit of Durer's later works is not apparent. His figures are then constructed on a strictly geometrical principle, and the mechanical balancing of the picture is too manifestly displayed.

As distinguished from these earlier pieces, such prints as the "Melancholia" and the "St. Jerome in his Study" exhibit a great advance, if not a complete change, in thought. The "Melancholia" is the outgrowth of his mysterious thoughtfulness, the "St. Jerome in his Study" the embodiment of his wonderful power of technical expression of materials and textures, joined with his loving enjoyment of the sunlight and of the very fact of existence.

In the "Melancholia" there sits absorbed in solemn thought a mystic female figure. Her folded wings betray a more than mortal frame; a book, just closed and clasped, rests upon her lap; in her hand a compass, which she holds unconsciously; on the wall above her is the magic square of Agrippa, and the mystic numbers of Paracelsus; a winged boy writes silently beside her on a tablet; curious instruments of measurement lie about, and in the distance stretches a landscape, illumined by "a light that never was on sea or land," a flaming comet spreading its rays beneath an arching bow.

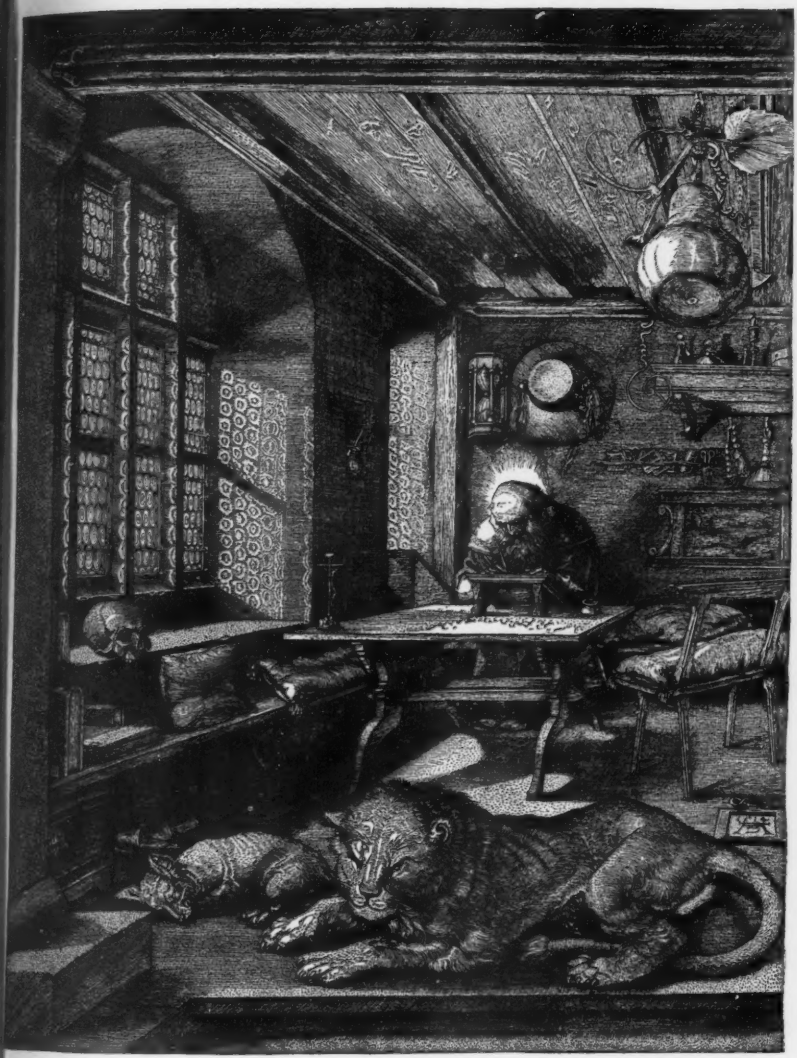
The critics of four centuries have failed to unravel the mysteries or solve the riddle of this famous piece.

The versatility of Durer, in his later years, is shown in the "St. Jerome" already mentioned. Here all is enjoyment of life. The warm sunlight flickers through the rounded panes of ancient glass. The Saint sits beside his table in comfortable study. His symbolic attendants bask upon the floor, closing their eyes tightly in the bright, rich light. The texture of the

beams and walls, the cushions, and even the differing fur of the animals, is admirably expressed, and the whole print is filled with the delight in home and homelikeness which marks so many of Durer's pictures.

But these specimens of his later work are sufficient to contrast his later with his early efforts, and indicate that there is an almost inexhaustible field of study in Durer's achievements. The half-century has shown us a rude beginning but a close full of promise—a promise, however, which only Durer was able to fulfil, and which was soon followed by a decline in originality, the copying of Italian forms, without their spirit, and the mannerisms of an imitative practice.

FREDERIC H. BETTS.



St. Jerome in his Study.

Albert Durer.

Article II.—THE RACE PROBLEM AT THE SOUTH.

The "Race Problem," which to-day confronts the American people, has long been interwoven with our party politics. If this is unavoidable it is not the less unfortunate. A subject which demands for its proper consideration an unprejudiced mind, a clear head and a cool heart, will greatly suffer when it is cast into the arena where party interests contend for mastery. Undoubtedly parties are inevitable in free governments; undoubtedly they are necessary for the conduct of free governments; but it is quite as clear that one of the direct and universal results of party influence is to arouse passions, to cultivate prejudices, to make men blind to the true public weal, and even to put party, however unconsciously, in place of country. "The blinding and distracting influences of party," says Mr. Burke. "The headlong and plunging spirit of party," says Mr. Webster. Independence of party does not imply disuse or disapproval of parties. It means only that parties are not our masters; that we should shrink from doing what our individual judgment condemns without the smallest hesitation or regard for party interests. The value of parties is conditioned on such inflexibility of private judgment. A party which is made up to a large extent of those who keep themselves free from all trammels in their judgment and action, and who are ready at all times to exercise "the divine right of bolting," is the only party which in the long run will be kept true to purely public aims.

It is proper, therefore, that I should begin by saying that I should not have attempted to discuss in these pages this so-called "Race Problem," if I had not intended to discuss it without regard to party influences or interests, or if I had not felt that I could so discuss it. I do not affect to despise parties. I do not intend to underrate their value. I merely try to look clearly at this subject and to lay aside party feelings. Perhaps it is due to entire frankness that I should say that on nearly all our important present issues, my sympathy and judgment are

with the Democratic party. I am opposed to the enlargement, by construction or by practice, of the national functions and powers. I am in favor of the reform of the Civil Service on the lines of the present Civil Service statute. I am in favor of tariff reform and ballot reform. And because I am in favor of these causes, I am in greater sympathy with the Democratic than with the Republican party.

The Negro question, the Race problem, by whatever name we call it, is as old as our Constitution and government. It has had many phases. In 1863, as a war measure, the slaves of the South were proclaimed free by President Lincoln. In 1865, by the 13th Amendment of the Constitution, they were made free by civil law. They then numbered about 4,000,000. In 1867, by the Reconstruction Acts of Congress, they were made voters. The result of this was in three States —South Carolina, Mississippi, and Louisiana—to give a numerical preponderance of voters to the race which four years before were slaves. Its result further was in many counties, cities, and precincts, throughout the South, to give a like preponderance to the black race.

Under the practical operation of the Reconstruction Acts, ten of the Southern States—all the seceding States, in fact, except Virginia, where subsequently the negro vote combined with the repudiation vote, and both led by Mahone, gained ascendency—passed under the control of the party which commanded the votes of the black race.

In 1876, all these States except three—South Carolina, Louisiana, and Florida—were under the undisputed control of the party which controlled scarcely an appreciable fraction of the black vote. In that year, the election of a President turned on the Electoral votes of these States. Immediately after the counting of those votes for the Republican candidate and his inauguration, the President withdrew the Federal troops from the capitals of those States, and the governments chosen mainly by the black vote disappeared, and the party composed almost entirely of the white race came into full power. Thus, within the brief space of thirteen years, the negro race was emancipated by proclamation, made free by

constitutional amendment, made voters by Acts of Congress, put in political control in eleven States, and finally overthrown and deprived of political control in all those States.

All this is veritable history on which no controversy can arise.

Since 1876, the black race, now numbering over 8,000,000, has, with slight exceptions, had no political influence in elections at the South. They remain, as before, a majority in fact of all the legal voters in three States—South Carolina, Mississippi, and Louisiana—as well as in many smaller political divisions and communities, but they have almost no political power. By some process, the result has been reached, that the negro vote at the South is suppressed or silenced. The result is all that I am now concerned with. Accepting the fact of the suppression or silencing to so large a degree of the colored vote at the South, the question is presented whether, under the circumstances stated, the national government, or the other States, or the people of the other States, have any duty to perform, any interest to protect, or any right to assert? This is our Race problem.

The first and most significant fact to my mind which the history now recited presents, is the fact that in three whole States, and in many parts of other States, the numerical majority has been quite overcome and subdued by the numerical minority. It recalls and enforces the truth so often overlooked, that the real foundation of the rule of the majority is not the fact of the greater number of votes, but the fact that behind the greater number of votes is always presumed to stand the greater part of the physical force of the State or community. The rule of the numerical majority is possible or practicable, in case of contest or opposition, only on the assumption that the numerical majority represents and embodies a physical majority, a preponderance of physical power. There are such things as rights independent of power or of force, rights which no power or force can destroy or diminish, but there is no firm basis for a civil government except in the assumption that it represents and on occasions can command enough physical power to enforce its will, its laws. Usually, in our country, a numerical majority does represent a physical majority. But

in the present case it does not. A relatively small numerical minority holds and exercises exclusively the powers of government.

What lesson is here taught? The lesson surely that the rule of a numerical majority has its limitations as a practical rule of government,—the lesson that the rule of a numerical majority presupposes and assumes that the whole community is substantially homogeneous and equal, that its members, man for man, stand in substantial equality, that in case of necessity a numerical majority of one makes an absolute physical majority, so that such majority of one can, if need be, enforce its will by physical power. There are doubtless many numerical majorities which do not actually represent the preponderating physical force of the community. Many existing governments might undoubtedly be overthrown by the attack or resistance of a numerical minority, but it is nevertheless the assumption that a numerical majority is a physical majority that has made the rule of the majority possible and practicable.

Here, now, we come upon a case in which a large numerical majority does not constitute or embody an actual or available physical majority. The result is that our familiar rule—the rule of the numerical majority—is summarily set aside, and the minority rules. This is commonly said to be repugnant to our American ideas of government. I do not think it is. It is only repugnant to the idea, that classes of men, who by race, or history, or other cause, are hostile or opposed to one another, can be counted, man against man, in a struggle for supremacy. There is a sense—and we have come upon it here—in which votes are weighed and not counted. Your man for man count will not always do. Government may in some measure protect the weak from the strong. It may in many ways make one man the equal of every other man. But when the question is one of the power of the government itself, we find here, and we shall find in every similar test or crisis or emergency, that men cannot always be counted by polls, that men in these last resorts must be weighed, that brains have weight, that blood tells, that experience is strength, that ancestry and history count, that race pride is a factor of untold power, that a servile history is a legacy and condition which no executive proclamation, no constitutional amendment can change or remove.

One lesson, then, taught by the situation at the South is that the rule of a numerical majority cannot be maintained until the preponderance of weight as well as of numbers is on the side of the majority; that until this is the condition, the rule of the numerical majority cannot stand except through outside, extrinsic aid.

But there is another lesson to which I wish to draw attention. It is the lesson that it is not good for the black race, not good probably for any race, to exercise power or to stand in places of responsibility for which they are unfitted and unequal. The rule of the numerical majority at the South from 1867 to 1876, wherever it prevailed, resulted in intolerable misgovernment. Whether the methods adopted by the white race for the removal of these evils were the only practical methods, were necessary methods, I do not here stop to inquire. That they were believed to be the only effective resort by those who employed them, cannot be doubted. At any rate, as I then said and now say, the evils complained of were intolerable; and when the struggle came, the governments resting on a mere numerical majority went down like frail wooden structures before some mighty cyclone. The numerical majority, with all its contrivances of government, passed away and has never since made even the show of resistance or reappearance.

Fourteen years have now passed since the last State government at the South supported by the Republican party or by the negro vote was overthrown. What has been the result? I suppose I am a competent observer on this point. Recently a business errand has taken me to the State which was for twelve years my home. I have for several months mingled freely with all classes in that State. I find a vast and surprising advance in the wealth, productions, industries, modes of living, and general welfare of both races. I find, almost without exception, harmonious and friendly relations existing between the two races, except upon the subject of political parties. I find that on this latter topic the relations of the races are far less embittered than they were before 1876. I find the negro more industrious than ever before, and I find him contented and happy, except when he is incited to political activity or unrest by the professional or party politicians who

still keep his ear. The negroes, nine out of ten, are now at work, politics are abandoned, the number of schools and children in attendance are greater than in 1876. The exact facts respecting the public schools in South Carolina are worth stating. Not only has the length of the school year been increased, but the number of schools has increased since 1876 by 63 per cent.; the number of teachers, by 55 per cent.; and the number of pupils, by 89 per cent. The character and efficiency of the schools have increased, as will be apparent to any observer, in a far greater ratio.

I find the race of colored politicians, so-called colored leaders, has passed away. One looks almost in vain for them. A few only linger on the stage. The race too of strangers and adventurers, without home or pursuits, except public plunder, has passed away. The old political machinery has fallen to pieces. Nothing but the skeleton or shadow of political organization remains.

This is the result, as I see it, of fourteen years of the rule of the intelligent minority of South Carolina and of the suppression of the ignorant majority. I make this report neither eagerly nor reluctantly. I make it only in the interest of truth. It is what I see or at least what I think I see.

I have already said our Race problem presents the question, whether we of the North have any duty to perform in this aspect of affairs, and if any, what?

One or two things are plain, I think, from the facts as they have now been stated: one is that if the colored numerical majority in any Southern States or parts of States are to be restored at present to political power, if their right to vote is to be presently secured to them, it must be done by some power outside of such majority itself or the States where such majority lives. There is certainly no power which can intervene except the general government of the United States. We arrive, then, at the question, ought the government of the United States to intervene? My first answer is that I do not think any people which is free to help itself and does not, ought to have help from others. The negro has been helped as no race was ever helped before. He was set free by others, not by his own efforts. He was enfranchised by no efforts of

his own. He had full opportunity to build up and protect his liberties. The whole power of the United States was at his call for eight years, and what was the result of it all? Am I wrong when I say the result was that the negro showed only weakness, unfitness for the task laid upon him? Is it not a mild statement of a clear fact, to say that the negro in South Carolina, in Mississippi, in Louisiana, is unequal to supporting a respectable or substantial government?

Why, then, should the general government of the United States seek to uphold him when he has shown his own incompetency to use the powers he has had? I confess with all seriousness, I might say with sorrow—for my personal sympathies are still strong for that race—I confess I would not again put the negro, if I could, in the positions he held in 1876. He must wait and learn in the hard school of political adversity or even political servitude, if need be, how to hold, to keep, to use, the political powers of government. If ever that time comes, the negro will recover political power without your aid or mine. If it does not come, it will be idle and worse than idle for us to attempt to secure to him the rights which he has let drop from his weak, inexperienced, and nerveless grasp.

But, if the aid of the general government would, if given, be of benefit to the negro, there is no legal, constitutional way in which it can be given. This government, it can never be too carefully remembered, is one of strictly limited powers. The power, the function, the right, of each branch or department of the government is strictly limited. The idea of unlimited power has no place in our political system, no analogue in our political vocabulary. These limitations were and are self-imposed. It has been, it is the will of the American people that the powers of no person, or department of their government, shall be absolute. We are obliged, therefore, when a demand is made for the action of the Federal government in behalf of the colored citizens of the Southern States, to ask whether the Federal government possesses such power.

Such a system of government no doubt has its inconveniences. It is far simpler and more convenient in reaching a pre-determined end to have no constitutional hindrances. Noth-

ing is so simple and convenient in this regard as a despotism or a highly autocratic monarchy. The emperors of Russia and Germany, the governments of England and France, can do many things for the protection as well as the oppression of their citizens which our national government cannot do. The characteristic of our system is that the specific power to be called into exercise must be pointed out. It is a system which Americans approve and cherish, a system which through more than a century of experience has shown its strength for national defence and protection as well as its adequacy to duly secure the common domestic rights and interests of its citizens. No American, anywhere, I suppose, would suggest a change in the great characteristic which I have pointed out.

Without entering here upon an original discussion of the present question, it will be sufficient to say that under the decisions of the Supreme Court of the United States, Congress has not only exhausted but has exceeded its constitutional powers in the direction of attempts to enforce the rights of negroes within the several States. A series of Acts of Congress were enacted between 1868 and 1872 having for their object the enforcement of the negro's right to vote. These Acts were enforced or sustained by all the power of the first administration of Gen. Grant. That the efforts made to enforce these Acts of Congress in behalf of colored voters went often beyond constitutional bounds, is now admitted, I think, by men of all parties. Gen. Grant himself confessed that the country did not approve the extent to which his efforts went in this direction, and that such efforts could not be repeated by any party with the public approval. The efforts to secure by congressional action the civil and political rights of colored citizens may be said to have culminated in the well-known Civil Rights statute of March 1, 1875, which was entitled "An Act to protect all citizens in their civil and legal rights." This was in substance the measure which Senator Sumner devised and to which he made allusion in his last hours. The constitutionality of this statute was considered by the Supeme Court in 1883 and decided in what are known as the "Civil Rights Cases," reported in the 109th volume of the Supreme Court Reports. It was there held that the 14th amendment applies

only to the *States* and not to individuals, to *State* action and not to individual action; consequently, that when by that amendment Congress was given power to enforce its provisions, it was only given power to legislate in correction of *State* action and not in direct enforcement of civil rights as against individual action. Hence, the denial of rights to colored citizens by individuals not representing in a legal sense a *State*, was a matter not within the constitutional power of Congress, but was left by the constitutional amendment exclusively within the power of the several States. From this it plainly follows that the denial of civil or political rights to colored citizens is not an evil which Congress can correct unless such denial assumes the form of *State* action, that is to say, action in the form of a State statute or the official action of a State officer representing the State.

If, therefore, any State by its action as thus defined, denies or abridges the rights of citizens of the United States, Congress may correct such legislation and may enact measures which will defeat such *State* action. If, on the other hand, individuals or collections of individuals, larger or smaller, combine or resolve to deny or defeat the rights of citizens of the United States, the offence is one which lies within the exclusive power and jurisdiction of the State. If the State neglects or refuses to punish the offender or to enforce the rights denied, Congress is powerless to legislate respecting it, and the whole general government in all its separate and aggregate powers and departments is powerless to act. Such is our constitutional system as interpreted and fixed by our highest Court, composed with but one exception of judges belonging to the Republican party. When, therefore, as recently, the President of a New England college gravely and passionately declared that his party would no sooner surrender Mr. Sumner's Civil Rights Act than it would surrender Mr. Jefferson's Declaration of Independence, did he not present an unbecoming example either of ignorance or of fanaticism? The simple fact is that the negro has to-day all the protection our national government can give him, the same protection that the white man has, and if it were on any

account desirable to further aid him by the action of the general government, it is not within its power to grant that aid.

And this conclusion which seems to be beyond the domain of discussion or doubt, leads again to the inquiry, why is it that the protection which is sufficient for the white race is thought to be insufficient for the colored race? I think the words of Cassius to Brutus give the true answer:

> "The fault, dear Brutus, is not in our stars,
> But in ourselves, that we are underlings."

Race prejudice is most commonly named as the cause of this difference in respect to security of legal rights, but in my judgment it is not race prejudice alone or principally, but race weakness. Why is it, let me ask, that no other race or nationality of citizens in our country is subjected to the wrongs complained of by our colored citizens? I think if we would look clearly and dispassionately at the question, our answer would be that it is because no other race or nationality has the qualities of self-assertion and self-defence to so small a degree. As I have said, no race was ever so oppressed at one time or ever so helped and patronized at another time. We have now reached the point where our legal means of aid is exhausted, and we must say to the colored citizen—"You have all the protection we can give you; all we have for ourselves; for the rest, you must help yourselves." As Judge Bradley remarked in his opinion delivered in the Civil Rights cases: "When a man has emerged from slavery, and by the aid of beneficent legislation has shaken off the inseparable concomitants of that state, there must be some stage in the progress of his elevation when he takes the rank of a mere citizen, and ceases to be the special favorite of the laws, and when his rights as a citizen, or as a man, are to be protected in the ordinary modes by which other men's rights are protected." Precisely that stage has been reached, in my view, by the colored race in this country. More or greater aid cannot be given him in his struggle for the enjoyment of equal rights, because the constitutional limits set to our government in this direction have been reached. More or greater aid ought not to be given, if we were free to

give it, because the point has been reached where self-reliance alone can establish the practical capability and value of the colored race as citizens.

But there are more specially partisan aspects of the Race problem which must be considered. One of our great political parties professes to be the especial champion of the colored race. With each recurring election, it presents the claim to our confidence and support, that it is devoted to the great mission of securing a free vote and a fair count in all the States. This broad claim is not accompanied by any statement of methods or measures which will secure the end or redeem the promise implied. No platform or declaration of principles and purposes of that party anywhere informs us in what way a fair count and free vote can be secured to the colored voters.

When the founders of the Republican party were fighting the early battles of the party, their demand was "No slavery in the territories," and their banners bore the Wilmot proviso forbidding slavery in the territories. It was a practical demand, supported by a practicable method of enforcing it. Can any most ardent member of the Republican party tell me what single measure his party now presents for securing a free vote and a fair count at the South, for securing to the colored race the rights it does not now enjoy? The evil complained of is that in South Carolina, for example, a majority of the legal voters are colored Republicans, but that the State is governed exclusively by white Democrats. Now, since 1876, has any Republican statesman or party leader pointed out any means by which this evil can be corrected and this wrong redressed? Prior to 1876, that party had claimed and constantly exercised the right of employing the Federal troops for the protection of voters at the polls and for the support of the State governments elected and established by the colored voters of the Southern States. In 1876, as has already been stated, the result of the Presidential election hung on the electoral votes of the three States of South Carolina, Louisiana, and Florida. In each of those States the Federal troops were employed to uphold the existing State government. Immediately after the inauguration of President Hayes the troops

were withdrawn. This was done, if not under an express agreement entered into prior to the declaration of the election, certainly as a policy of the Republican party, approved and sanctioned by that party. In other words, whatever the motive or merits of this action, it was a distinct announcement that in the view of the Republican party the policy of Federal interference in the States, and Federal military support of Southern State governments, was a policy no longer to be tolerated. That action meant that thenceforth the colored voters of the South must make their struggle for their political rights without Federal aid. It was a remission of the rights of the colored voter there to the same local arbitrament which prevailed at the North. The majority, there as here, must be able and ready to defend its rights, or it must go down. It did go down. It has never since regained or re-asserted its rights. It makes no effort to do so. Now, it is the reiterated constant claim of the Republican party that something shall be done to restore power to the colored majority in the Southern States—a work which that party deliberately refused to do in 1876—a work which no man of that party can now point out a constitutional method of doing.

I ask, is not this something less than statesmanship or patriotism? Ought not all patriotic citizens, all true friends of the colored race, to look plainly at the facts? The facts are, as we have seen, that there is no practical means of dealing with this matter on the part of the Federal government, or on the part of any people or power, except the States themselves where the alleged wrong exists; that in 1876, the Republican party abandoned the policy which alone could have enforced the present demands of that party. The true duty of patriotic men, then, is,—is it not?—to lay aside political agitation of a question which is beyond the reach of political action? I do not say that those who think that wrongs are done to the colored citizens at the South should cease to deplore or denounce these wrongs. What I say is that while the redress of these wrongs is not within our political competency, it is futile and unstatesmanlike to attempt to make them a political issue. Political controversies, the interests of parties, inevitably complicate and delay the solu-

tion of questions which are not political in their nature, or which cannot be reached and settled by political methods.

But if, as I have tried to show, the only remedy for the suppression of the colored vote at the South is the acquirement by that class of voters of qualities and attainments which they do not now possess—education, self-respect, self-reliance, property, morality, the habits of self-control, of self-assertion, and self-defence; in a word, the qualities which now mark their opponents, the white race—then it seems clear that our duty is quite other than political or partisan. No man can outdo me in readiness or determination at all times and in all wise and legitimate ways to aid in fitting the colored race for the work of governing or sharing in the government of those States in which he constitutes a large part of the legal voters. I am warranted in saying that such efforts for the enlightenment and elevation of the colored race will receive the support of the white race of the South. They are unalterably opposed to the political supremacy of that race in its present stage of development and progress. Upon that point the argument with them is closed; but to efforts for the education and advancement of the colored race they are not opposed. The broad statement is justified that in view of the relative resources and taxable property of the South, the Southern States are expending relatively as much money for popular education and with as good relative results as are the Northern States.

I have said that although the Republican party puts forward constantly the question of Southern elections, it does not even propose a plan of removing the evil complained of. Perhaps I ought, in order to be entirely fair, to say that a few persons at least have suggested, and one Senator, Mr. Sherman, by request and without endorsement, has introduced into the Senate, and more recently Mr. Lodge of Massachusetts has introduced into the House of Representatives, a bill for regulating by act of Congress the election of members of Congress. The constitutional warrant for such an act is thought to be found in the fourth clause of the fourth section of Article one, which is as follows: "The times, places, and manner of holding elections for senators and representatives shall be prescribed in each State by the legislature thereof. But the Congress may,

at any time, by law, make or alter such regulations, except as to the place of choosing senators."

Giving to this clause the fullest latitude which can be claimed for it, it would permit Congress to pass an act prescribing the time, place, and manner of holding elections for Congressional representatives. It would not affect any election for State officers or any election held under State laws. If such an act were in force and were effective for its purpose, it might secure to the colored voters of the Southern States the privilege of voting for members of Congress; nothing more. It would leave untouched all the elections in which that race is most interested, which most affect its welfare and interests. For example, it is plainly the State legislatures and the State officers which determine to the greatest degree the negro's enjoyment of civil and political rights. The questions of taxation, of public schools, of rights of property, of the law of contracts, marriage, divorce, descent and inheritance of property, the constitution of the courts, the choice of judges, of local justices, and their administration; in truth, nearly all the common, every day interests which are at all affected by public laws and action, lie outside of the proposed measure of congressional legislation and will remain wholly unaffected by it.

The only result will be that the colored voters may vote freely for members of Congress. And in what way or to what extent will this benefit him? It may result in adding to the Republican majority in Congress. If it does, how will this benefit the colored race? If Congress has already, as we have seen, reached and in many instances overpassed the limits of its constitutional power in its efforts to deal with the matter in question, an increase of the Republican members of that body would not enlarge its power in that direction. No law could then be passed, which might not have been passed at almost any time since the enactment of the reconstruction measures. The colored race would, therefore, reap no benefit whatever in respect to their most vital interests by an act of Congress which should be effective to secure them a free vote and fair count in elections only for members of Congress.

But, further, how is such an act of Congress to be made effective for its end against the opposition which it must be assumed by those who favor such a measure, will be made by communities in which the evil aimed at exists? It must, under the assumption of the measure itself, be enforced by the agents and agencies of the general government. It must, in plain terms, be enforced, if need be, or if opposed, as former acts of Congress relating to the subject of elections at the South have been attempted to be enforced, by the army of the United States. This policy has heretofore been found to be disastrous and impracticable by the party which attempted it under the lead of President Grant. It was finally abandoned in 1876. It had produced a situation of danger and disturbance so acute and threatening that the Republican party deliberately and formally abandoned it under circumstances which appealed to the interests and sympathies of that party as strongly, probably more strongly than any circumstances which will hereafter occur. I cannot believe that the Republican party is ready to repeat the experiment of military coercion. I am perfectly sure the country will not consent to its repetition.

We reach the conclusion, therefore, that the proposed measure as a measure to secure a free and full vote of the colored race at the South cannot be made effective. Measures of this kind, which failed in the hands of General Grant, backed by a large and eager party majority in the full flush of the anticipated party triumphs depending on the success of the attempt, will hardly come as near success hereafter. If, as General Grant confessed in one of his last utterances as President, the country was tired of such attempts to enforce this class of laws by the use of the army, and if, as President Hayes declared, the spectacle of United States troops attending voters at the polls was "offensive to the political sense of the country," it will scarcely come to pass again in this generation that the attempts will be repeated with the approval of the American people, however much party politicians and leaders may demand it.

There is, then, no practicable legal or political means, in my judgment, for the reasons now stated, by which the right of the colored race to vote can be secured through any action of

Congress or of the general government. When this government was founded and its powers and functions fixed, it was quite as much the purpose of its authors and framers to secure the autonomy of the States within certain well-defined limits, as to create and empower a national government which should be adequate for certain well-defined national objects. During the century of our national life and at its close, the world recognizes as never before the profound practical wisdom of the arrangements and adaptations which are embodied in our Constitution. If, now, we have come to a point in the evolution of our Race problem where the national government has reached its limit of power, will any thoughtful, reasonable, patriotic American hesitate between the choice of abandoning, on the one hand, a party policy however fascinating or apparently advantageous, and, on the other hand, a firm adherence to constitutional duty and constitutional limitations? To me the barriers to national or federal power are quite as sacred and inviolable as the barriers to State power. The colored race, not as a race but as American citizens, is entitled to all the rights and to all the protection in exercising those rights, which the Constitution provides. No race, no class or body of our citizens, is entitled to more. The colored race throughout our land has to-day all the constitutional rights and all the protection in those rights which any class of our citizens can claim under the national constitution. If unfortunately the rights of that race are practically not enjoyed in some of the communities and States where it is found in largest numbers, it is a result, a situation, an evil, if you please, which must be left for correction to other influences and other agencies than our national government. I should speak far less than my whole mind on this subject, if I did not say, in terms, that I do not regard the denial of the negro's or a white man's right to vote, your right or mine to vote, as an occasion warranting the least departure from our approved authoritative standards of constitutional construction. The time has fully come, in my opinion, when, to quote again the language of the Supreme Court, the colored man "must take the rank of a mere citizen, and cease to be the special favorite of the laws, and when his rights as a citizen, or as a man, must be protected in the ordinary modes by which other

men's rights are protected." The colored race are no longer the "wards of the nation." They are an integral part of the great body of our people, and new laws or attempts at new laws for the special advantage or protection of that race are out of date, impossible, and mischievous.

I have already referred to the disturbing influences which party interests and party prejudices have thrown over this question. One of our great political parties sees or thinks it sees in the free vote of the colored race in the Southern States the means of its greater party power and success. The other party, undoubtedly for like reasons, looks with disfavor upon efforts to change the present situation. But I am persuaded that if any body of intelligent patriotic citizens could look at this problem which we call our Race problem, with unbiased and unprejudiced minds—if they could consider truly the conditions and limitations which surround it, its nature, its causes, its history, they would agree in the conclusion that it is a problem which cannot be solved by party political action of any kind. Such minds would see a numerical majority of voters in some States and many smaller communities controlled absolutely by a numerical minority. They would further find this numerical majority unfit to govern, ignorant, inexperienced, the easy victims of false guides, the ready dupes of selfish demagogues, unable to grasp public interests or to perform public duties. Seeing all this, such observers would with one voice, I think, reach the conclusion that until the numerical majority could be transformed into the majority in character, education, experience in the arts of government, in self-respect and self-reliance, the same result would continue and the real power and rule would of necessity remain with the minority in numbers which was nevertheless the majority in power. Seeing this, such minds again would, I think, say the remedy for this situation lies not in an attempt to reverse a law of moral and intellectual gravitation or dynamics, but in an effort to convert the numerical majority, by education, by all the civilizing and elevating arts of social life, into a self-respecting, self-sustaining, actual majority. Such a remedial process would of course be slow. It would involve a long tutelage, a long probationary service in

the school of experience and practical discipline. But if the existing situation were seen to be the result of centuries of servile relations and history, no philosophical observer, no truly philanthropic mind, would wonder at the situation or be disheartened at the task. Especially would no statesmanlike mind for a moment dream of attempting by outside force to clothe the incompetent numerical majority with powers of government which they had proved themselves unable to grasp and hold.

Along such lines, through such influences, by such aids, and not otherwise, I see a wise, practicable, lasting solution of our Race problem. In presenting it and in urging it, above all in deploring and discountenancing the spirit of party which now encompasses and complicates this problem, I am conscious of no diminution of my personal fidelity to old ideals and principles. The problem which we have discussed has reached a stage where its wise and successful treatment is beyond the ken of politicians or mere philanthropists. It is a problem of statesmanship, of high public economy, of enlightened, prudent management, of patient, far-looking, cautious, adaptation of means suited to the great ends which are in view.

I have read very recently an address on the subject I am discussing, delivered at Cambridge by a gentleman* for whom I have all the respect which high character, unselfish aims, and deep convictions can command. He represents not the Republican party, but that small number of men who from genuine philanthropic impulses cling to the idea that the country still owes to the colored race the duty of securing to it its right to vote in the Southern States. I quote from that address a passage which presents this view, as a fair and fresh statement of a demand which is still made by the class or body whom the speaker represents:

"The true solution," says Mr. Hallowell, "of the Southern question cannot come until, in tones strong and unmistakable, the proclamation and the edict go forth from Washington 'that this is not a white man's government, nor is it a black man's government, but it is a government of all the people, white and black. That the political suppression of the colored

* Mr. Richard P. Hallowell.

man must cease. That the rights of every American citizen must and shall be preserved. That the federal Constitution must be respected and obeyed.' Let us make American citizenship as secure in South Carolina as it is Massachusetts."

Here is a demand and programme which lack nothing except the important element of practicability. If Mr. Hallowell had anywhere in his address hinted at a method or measure for enforcing the demand he states, he would have put his address on a higher than a mere academical plane. It is "from Washington," you will observe, that the proclamation must "go forth." That is, the federal government must enforce the demand; must make "American citizenship as secure in South Carolina as it is in Massachusetts." If, now, Mr. Hallowell, or any one who agrees with him in this demand, will tell us plainly in what way this can be done, he will raise his demand from the level of mere declamation to a veritable question which the country should gravely consider. I might safely challenge him, I might safely challenge all Republicans, all men who demand new or further protection for the colored race, to tell *how it can be done.* I do not think I do the least injustice when I say that I do not believe any man who has given serious thought to the question, can, or thinks he can, devise a practicable, constitutional mode of securing the right of the colored race to vote in South Carolina through the agency of the federal government. With politicians, therefore, the demand is a dishonest pretence; with Mr. Hallowell and such as he, it is not a dishonest pretense but it is a mistaken conception of the nature of our governments, and the functions, respectively, of the Nation and the States. If to-day in Massachusetts a minority, in numbers, of her voters and citizens should resolve to exclude, by whatever device or force which did not constitute *State* action, the majority from exercising their political rights, and should carry the resolve into effect, the federal government would be as powerless to prevent or correct it as it is to prevent or correct it in South Carolina; and the simple reason why all men in Massachusetts enjoy their political rights is because no majority in Massachusetts, by their ignorance and inexperience, arouses the minority to such action, and because no majority in Massachusetts is so weak, by reason of its igno-

rance and inexperience, that it cannot defend and secure its own rights.

It is obvious that if there is no practicable method by which the right of the colored race to vote in the Southern States can be enforced by our political action, or by the action of the federal government, there is neither wisdom nor prudence, statesmanship or philanthropy, in continuing to make our Race problem, a political or partisan issue. The only course for reasonable and patriotic men is to recognize the facts as they exist, and to deal with the situation according to its nature and causes. The foremost fact is the ignorance and inexperience of the colored race. From that single, indisputable fact has come the determination of the white race at the South to suppress the vote of the colored race, as well as the practicability of enforcing that determination. To change this situation, to make a lasting solution of the Race problem, requires the removal of its causes, namely, the ignorance and incapacity for public affairs of the colored race. Time and the long influence of education and the slowly-maturing results of freedom are the methods to secure that solution. When we reflect that only twenty-five years have passed since the war closed, that the difficulties of the problem are the result of two and a half centuries of the slavery of the colored race; that the freedom and civil rights of that race are now recognized and declared by our Constitution and laws, the work that remains—the practical qualification of the colored race to meet the responsibilities and to exercise the rights which have been conferred on it—surely ought not to arouse impatience or suggest discouragement to the friends of the complete and universal, practical, civil and political freedom and self-government of all races and all men who make a part of our great body of citizens. The colored race only twenty-five years ago began its experience of civil freedom and government. Our own race began it at least eight centuries ago. I see no serious source of danger to the peaceful settlement of the problem I have discussed, except from the haste and impatience which misguided philanthropy may excite, and the antagonisms and conflicts which party rancor and party interests may arouse and keep alive. If, laying aside some rooted misconceptions and fully compre-

hending the real conditions of the task, the patriotic and Christian forces of the country can be united in a patient, courageous, unflagging effort to prepare the one race at the South to use their rights with wisdom and prudence, and to persuade the other race to use its power mildly and generously and to welcome and promote by all the influences of education and friendly relations, the progress and elevation of the humbler and less fortunate race, we shall see the beginning, and our children may see the end, of the solution of the problem which shall crown the mission and glory of the American people.

DANIEL H. CHAMBERLAIN.

Article III.—CODIFICATION OF THE COMMON LAW.

The law of England and America began in the general adherence of the people to certain traditional rules of conduct and of property. As far back in early English history as legal adjudications can be found, they were made by assemblies of the people, applying established customs to the questions before them. Those Teutonic customs differed widely from the rules which prevailed in the Romance countries, whose jurisprudence was based on the Roman law. As decisions were made in these popular courts, each one of course became a precedent which would be quoted as showing what was the law. So the "custom of the people" grew by adjudication more and more comprehensive. This method of growth has gone on without interruption to the present day. Whether the decision has been by popular assembly, by jury drawn from the people, or by judges, the appeal has always been to the common law of the nation, and by these adjudications the common law has grown in extent and definiteness.

"The common law," says Professor Robinson in his manual of elementary law, "is that rule of civil conduct, which springs from the common wisdom and experience of society, in time becomes established custom, and finally receives judicial sanction and affirmance in the decision of courts of last resort."

In modern times the law has become so extensive in scope and infinite in detail as to exceed the limits of general knowledge, and the custom of the people has come to be the custom or opinion of those jurists and judges whose lives have been given to the study. Decisions have for centuries been carefully prepared in writing, and officially published for the information of the citizen. These decisions have come to be the *corpus juris.*

Every American State now has its series of reports in which the cases decided by the highest courts are carefully reported, with statement of the facts, briefs of counsel, and the opinions of the judges.

If a certain question has been once decided by the Supreme Court of a State, that decision becomes established as law; if no decision of the precise question has been made, reference must be had to the principles established in analogous cases, or to the decisions of other States, which afford at least a presumption as to how the law will be finally established in the particular State in question. Every lawyer must have the reports of his own State at least, and adds those of such other States as he can afford. In difficult and important cases the search for authority will be extended to some great public library, with its ten thousand volumes of American and English reports.

Statutory legislation intervenes from time to time to alter the law as it has been defined by the judges. In some of the States the statute books enter every field of the law in much detail; in others they confine themselves principally to establishing the different agencies of government, prescribing their operation, fixing the penalties for crime, and only occasionally make an amendment or reversal of some common law rule stated by the courts.

The extension of the field of statutory legislation so as to supersede the authority of the law reports, and render unnecessary the constant examination of precedents, has long been a pet theory of speculative jurists, and of non-professional writers. Even in poetry we find contumely cast upon

> "the lawless science of the law,
> That codeless myriad of precedents,
> That wilderness of single instances."

During the present generation this theme has become one of practical legislation. The codes drafted for adoption in the State of New York, by Mr. David Dudley Field, have become the subject of almost endless discussion by lawyers, public men, and journalists.

New York has always covered an unusually wide field by her statutory legislation. Her Revised Statutes discuss at length those elementary principles, for which in other States reference is had to text-books. After a long agitation of the codification question in the press and elsewhere, the Constitutional Convention of 1846 placed the following Article in the State Constitu-

tion: "The legislature, at its first session after the adoption of this constitution, shall appoint three commissioners, whose duty it shall be to reduce into a written and systematic code the whole body of the law of the State, or so much and such parts thereof as to the said commissioners shall seem practicable and expedient, and the said commissioners shall specify such alterations and amendments therein as they shall deem proper.' *N. Y. Const. 1846, Art. I., Sec. 17.*

In obedience to this mandate of the Constitution, the legislature in 1847 appointed two commissions, one to codify the substantial law of the State, and the other forensic practice and pleadings. Mr. Field was at first included in neither of these commissions, but by changes in their membership he became a member, and the leading spirit, of both.

The completed work of these commissions consisted of six works: the Code of Civil Procedure, defining the jurisdiction of the civil courts, the method of practice therein, and the entire conduct of suits, the Book of Forms, and the Code of Criminal Procedure, whose titles explain themselves; the Political Code, which treats of the departments, functions, and methods of government, the Penal Code, which defines crimes and prescribes penalties, and, most important of all, the Civil Code, which embodies the general law of property, of contracts, and of all the duties and rights which the citizen owes to, and can claim from, his fellow-citizen.

The Code of Civil Procedure was reported in 1848, and promptly passed. It made long-needed reforms in legal procedure, and for that reason received much popular approval. A similar code was soon enacted in several of the other States, and certain of its principles, such as the fusion of law and equity, and the abolition of the several forms of actions, were adopted in nearly all the States. This Code received a crowning triumph when its principles were adopted, in the English Judicature Act of 1873, by the ancient and conservative country from which we inherit the common law.

New York then halted in her progress toward a complete codification till 1881, when the Penal Code and the Code of Criminal Procedure were passed. Meantime the Civil Code had been reported, became a subject of hot debate at every

session, was passed by both houses of the legislature in 1879, and vetoed by Gov. Robinson, was passed by the Assembly in 1881, but not acted on in the Senate, and in 1882 again passed both houses and was vetoed, this time by Gov. Cornell.

The drafts of the several codes had during all this time been receiving careful study from jurists all over the world, and had been adopted in their entirety by California and Dakota.

The Code of Criminal Procedure has been extensively copied, particularly in the newer States, which had no settled rules of procedure, and which were doubtless greatly benefited by the opportunity to adopt at one act the crystallized legal experience of the Empire State.

Codification in general, and the Field codes in particular, have thus become the subject of constant discussion in bar associations and legislatures for forty years, and in New York at least public men outside of the legal profession have become deeply interested in the question. The great influence of the lawyers of New York and other States has been generally cast against the project of codification. This has naturally raised a suspicion among many laymen that the lawyers feared that their own profession would become less necessary in the community, and many honest legislators of New York have no doubt voted for the codes in the firm persuasion that they would make "every man his own lawyer." I propose in this Article to state a few of the reasons which I think have generally actuated the legal profession in their opposition to codification.

The unquestionable favor with which this project has been entertained by the press and public is mainly produced by impatience at what is termed the uncertainty of the law; that is, its failure to definitely answer every question as to which guidance is sought. Many business men, seeking counsel as to their rights in some particular emergency, and being told that authorities are conflicting or lacking, and that it cannot be predicted with certainty how the court will decide upon their claims, feel that there ought to be an infallible and comprehensive statement of the law to which resort might be had for a definite answer to every inquiry. A civil code (which Mr.

Field has defined to be "a complete digest of the law of personal rights and relations, of property, and of obligations, analyzed, condensed, stated in distinct propositions, and arranged in scientific order") seems to promise a fulfillment of this need. I think such expectations involve a failure to realize the immensity of the problem.

The function which is entrusted to the law in a modern commercial State is one of infinite intricacy and difficulty. The duties of every man to the public, his rights and duties in every relation to others, domestic, civic, and contractual, the control of all his property rights, the interpretation of all his contracts, the application of principles of justice to the ten thousand conflicts and complications of rights which daily arise,—these make problems of great difficulty, and problems into which new factors are daily being introduced. Every new invention in business methods requires a modification of the rules hitherto applied to the former system; every contract and will, every familiar conflict of rights diversified by the addition of some different circumstance, requires a new adjustment of legal doctrine.

The supervision of contracts received a new element of difficulty when the facility of mail communication caused parties more frequently to deal with each other at a distance, and with a considerable lapse of time between the making of every proposition and the receipt of the answer; the telegraph required a new revision of rules by its greater speed and its liability to error in transmission; and recently contracts by telephone are occasionally subjects of litigation. Who can foresee what questions may arise when the portable tin foil of the phonograph becomes the medium of commercial negotiation?

After the rights of travelers by wagon and of railway passengers have been long under discussion and settlement, the bicycler has arisen, and wants to know his rights and duties, in streets, on sidewalks, and elsewhere.

These are but illustrations of the constant changes of general factors of business; the particular combinations of circumstances which are presented to lawyers for advice, and to courts for decision, are endless. The humblest practitioner is constantly confronted by situations the exact form of which is without

precedent, and his only resource is to apply established principles, and the rules adopted in analogous cases, with what skill he possesses; and if the court of last resort reason differently, his client may be the sufferer.

Thus the field of litigation continually changes. The courts fifty years ago were deciding questions which are now either well settled or obsolete; and the prominent topics in every year's digest of decisions differ from those of the preceding year.

Under the prevailing system these great and difficult problems of the law are settled, and its rules established, principally by the decision of litigated cases, each of which decisions finally settles, at least within the jurisdiction in which it is rendered, the precise question there involved. In each State scores of trained jurists, with a supervising and supreme bench at the head, are extending the field of settled law, not in the logical or alphabetical order, but in the order in which the questions actually arise. This process has gone on for centuries, and a vast structure of settled legal doctrine has already been constructed. The elementary rules were determined centuries ago, and have long been a part of the general consciousness—the extension of these rules to all fields of human activity has gone on unremittingly, and every year the body of settled law has become greater. In the farthest extensions of its principles to detail, in the newest application to modern conditions, the work of settlement is still going on.

People do not realize how vast is the proportion of settled principle. An intelligent business man is himself able to answer a great majority of the legal questions which occur in the course of his business, and when he consults a lawyer he gets a definite and unquestioning answer to a great proportion of the questions which were beyond his own knowledge; and the uncertainty in which he sometimes is left is caused in four cases out of five by the uncertainty as to the exact relation of facts.

In the comparatively small number of cases where the lawyer relies upon his own reason to answer the question, in the absence of definite adjudication, his opinion is often confident and the answer practically certain. There remains a residuum of undetermined questions which go into litigation, and so become settled for the next questioner.

If it should seem that the amount of litigation constantly in progress contradicts this statement, it must be remembered that an overwhelming majority of law-suits arise not from uncertainty as to the law, but from dispute as to the facts. Many or all of our States provide a comparatively simple and inexpensive process by which cases may be submitted to the courts, upon an agreed statement of facts, for a decision as to the legal effect of those facts; but the infrequency of such amicable suits shows that an agreement as to the facts can very rarely be made.

The law-reports, the final sources of the law, are made accessible by indexes and digests, which arrange the decisions by topics and sub-topics in alphabetical order, and briefly state the principle established in each case, and by text-books, often written by the most eminent jurists (Justice Story, Chancellor Kent, and Commissioner Cooley are among the American writers of text-books), which treat, more or less exhaustively, of special topics. All these summaries of the law are supported by constant references to the reports, and their function may be compared to that of the hand-book of science which states briefly the final results that have been attained, and which contents the general reader, but which the special student will use only as a guide to the books in which are contained the original work of the masters of the science.

In actual practice the lawyer is seldom willing to apply the rule which he finds briefly stated in his digest or text-book to the complicated facts before him without an examination of the precise conditions to which the rule was applied, and the reasons and qualifications which the court have given in their opinion. Would he find the brief rule of the code any more satisfactory? Does not the popular advocacy of codification really involve a fallacious supposition that a vast science can be put in complete form into a brief hand-book? If one would be able to solve every problem which an intricate science can suggest, he would probably need not a single manual of the science, but a library. If in the thousands of decisions of the courts of his State a rule cannot be found to answer a question of difficulty, what likelihood is there that such an answer would be found in the one volume or several volumes of the code,

which would depend for completeness not on the actual experience of business life, but on the scholarly skill of the codifier in his study?

Suppose the law of a certain State to have been codified, and the code to have been enacted as law. When the text of the code, stating the concise rule of law on any subject, is sought to be applied to circumstances of difficulty, or when it is uncertain which of two rules is the one applicable to the facts in question, the lawyer will inevitably refer to the case in which that rule had originally been framed to find its exact meaning and application. If the question be not clearly answered by the examination, or if there be a possible difference of construction of the language of the code, as there is with every other human writing, litigation will result; the court of last resort will declare the construction and application of the rule, and settle the dispute. But after this decision it will be known how any later dispute of the same character is sure to be decided, and so the decision will attach itself to the rule as stated in the code. And when a body of such decisions has arisen, a knowledge of these becomes necessary to the application of the code, and the code looks forward as well as backward for its interpretation, and becomes but a momentary resting-place of the law. That this has been the actual result of experience as to the only code which has been in operation for any length of time, in New York, I shall soon attempt to show.

But the uncertainties of the code will be not those matters only which were uncertain before, but those also which are rendered uncertain in the process of codification. For instance, a certain common instrument has been so often passed upon that its exact nature is fully settled. Perhaps no single case completely defines its nature and effect, but by a brief examination of the several cases all difficulties are removed, and lawyers are able to advise concerning it with certainty. The code now supersedes all case law with its "analyzed, condensed" definition of its nature. Will not such questions as these soon be asked:—Does this section cover exactly the field that the cases did before, or is the law altered by its language:—The phrase used in the code may have been first formulated in

one case, and afterward explained and limited to certain applications in a later case; do the explanations and limitations adhere to the phrase as here used or not? And so a host of uncertainties may be raised by the code itself.

As an illustration of this objection, let me cite two, selected quite at random, from the innumerable cases in which the provisions of the New York codes already adopted have created uncertainties in the law upon points on which there was formerly no doubt.

In People *v.* Dumar, 106 N. Y., 502, decided in October, 1887, the defendant was indicted for larceny. The crime proven would have been, the court say, clearly punishable at common law as an obtaining of goods under false pretenses. The prosecuting attorney, however, supposed that crime to have been consolidated with the crime of larceny by the Penal Code, and drew his indictment on that theory. The trial court, and the General Term of the Supreme Court, both sustained the prosecution, and held that the crime was properly charged. The Court of Appeals, however, held that the indictment, under the Penal Code, was an incorrect description of the crime, and reversed the conviction.

In The Republic of Honduras *v.* Soto, 112 N. Y., 310, a case which went to the Court of Appeals on a question concerning the giving of security for costs, decided in January, 1889, the court use the following language: "There can be no doubt but under the Revised Statutes" (the law preceding the Code) "that foreign States and nations were required to give such security; and we do not think that the provisions of the Code were intended to change the law in that respect." The General and Special Terms of the Supreme Court had both thought otherwise, and were therefore reversed.

As a practical fact, the interpretation of statutes is one of the most fruitful sources of litigation and uncertainty. An important act of legislation, however carefully drawn, and however small be the field of its operation, is almost invariably followed by litigation to settle questions of interpretation which arise in its application to the subject-matter. If the difficult task of concise and accurate statement be attempted upon the whole body of law by a single act, how infinite will

be the opportunity for error, and the likelihood of misconstruction.

Doubtless the persons selected as framers of a code in any jurisdiction will be men of great skill in the use of language, yet unless they are free from human imperfection, doubts will be created as well as removed by their work.

So the foundations that have been settled for centuries may be shaken in the process of improvement. As if a huge old tree,—that has stood unmoved for generations, trunk, and larger limbs, and branches, fully developed, but still growing in the million twigs, remote from the centre—should be pulled up, and supplanted by a cleverly made artificial tree, designed by an eminent artist. The new foliage and fruit might possibly be arranged with more symmetry, but injuries might be found to have happened to more important parts of the organism.

The common law is a growth; the code is a manufacture.

What are the evils sought to be removed by the code?

First, the multiplication of volumes. The press has been full of complaint at the number of volumes of reports to which resort must be had to ascertain the law, and the consequent impossibility of any unprofessional man being able to know the laws which affect him.

The answer to this complaint has been in part anticipated. The law is too vast in its scope, too nearly infinite in its detail, to be embodied, in anything more than an elementary form, useful principally for the use of students, in any small space.

Every State has its official or semi-official digests, in which its decisions are summarized and arranged for convenient reference. Not every question to be sure is answered by these, but I cannot see why any greater proportion could be covered by a volume of equal size bearing the sacred name of code.

If one wishes a careful examination of any special branch of the law, the text-books, treating exhaustively nearly every subject, give him what he desires. If the land-owner would find guidance as to the rules which govern his property in the part of a volume that might be devoted to real property in the Civil Code, why does he not now buy Washburn's three volumes on Real Property? The use of such text-books by the laity is exceedingly rare. The fact is, those unskilled in a

science have no confidence in their own ability to practically apply even the most popular hand-books, and prefer to trust to the professional assistance of those who have mastered the subject in its original sources; and this is as true, and will continue to be as true, of the difficult science of the law, as of any other.

The expectation that any complete statement of the law, in all its branches, is ever to be had without the possession of many volumes is surely fallacious.

Secondly, it is complained that the law is now determined at the expense of litigants. But this objection takes it for granted that those conflicts which are now unsettled by the many volumes of reports will in the code days be settled by the few volumes. If this expectation be fallacious, then litigation will be resorted to as before; and certainly when the final court has once decided a certain question, that will have been settled at some litigant's expense, unless, to be sure, judicial decisions are not then to be regarded as establishing precedents to be followed, in which latter case the question would have to be successively determined by every one in whose business the question arose.

But there are great elements of value in the present system of establishing law in course of litigation. No academic discussions are had; every question decided is certainly a practical one, for it has actually arisen. The jurists whose business it is to extend the domain of settled law are wasting no time in settling impracticable questions, but constantly proceed to the point where difficulties actually exist.

Again, the decision of vexed questions is had under the very best circumstances to insure correctness of decision. Every argument on each side is presented by counsel: general principle, analogous decisions, the opinions of other jurists, are all exhaustively urged, and no possibility of error is left, except the human fallibility that can never be avoided. Besides, the actual facts of the case at bar will suggest the practical effects of the adoption of one or the other rule. Consequences can be clearly seen, instead of conjectured, and will suggest the limitations and qualifications which practical utility requires.

How much more likely is a rule established with such aids to be correct and practicable, than if the question were taken

up by a codifier, or company of codifiers, because it had been reached in logical order, and settled as abstract consideration and discussion might suggest!

Thirdly, it is declared that under our present system the rule of law is laid down after, and not before, the transaction has occurred; and that the court hold a man in fault for violating a principle which was never before formulated.

This objection seriously misconceives the nature of the law, and the duty of courts. The law is not merely an aggregation of arbitrary rules, to be memorized and obeyed; it is an application of the true principles of justice and equity to the affairs of men. If one has committed an act which is censured by the court, it is because they find that that act is an unjust invasion of the rights of others. It is the duty of courts to scrutinize the transactions that are brought before them, and to apply to each the touchstone of justice. It is evident that this touchstone cannot be applied in advance to all combinations of acts and claims which may arise; and it is evident, too, that the man whose acts are declared to be in conflict with the golden rule of the law, "*Sic utere tuo, ut alienum non laedas*," has no just cause of complaint, because a precisely similar act has never before been committed, investigated, and condemned. It is true that the long labors of jurists have defined the limits of just dealing over a wide field of human actions; and the limitations have sometimes become conventional and arbitrary. But outside and beyond these, in the great, untrodden field of human conflict, the courts can only test the acts of parties by the law of justice written in the hearts of all.

The extreme advocates of codification would make courts mere drudges, to hunt in the code for a printed rule exactly analogous to the case, and in default of such to declare that justice has no scales to weigh human acts, and no voice to approve or condemn, to declare that the mandates of equity and right dealing are confined to the artificial rules which have been devised in advance by the code-maker.

The advocates of the code constantly refer to ancient and modern history in support of their theory. The great "Corpus Juris Civilis" of Justinian and the "Code Napoléon" are declared to have been important steps in the progress of human

civilization, and the great influence which these two codes have had is referred to as proving the value of the principle of codification.

It seems to me that neither of these codes have much relation to the problem as it confronts an American legislature. The condition of the Roman Law prior to Justinian was wholly different from that of the common law of England and America, and the purpose and nature of his compilation was wholly unlike the purpose and nature of a modern code. The title of Justinian's "Code," which was only a part of the entire work published under his authority, is the only thing in which it particularly resembles Mr. Field's Civil Code.

The Code Napoléon too was an attempt to solve an entirely different problem from that which meets us to-day. France was governed by a multitude of local systems, some based upon the Roman law, and some inherited from Teutonic sources. In traveling through France one "changed the law as he changed coaches." The great problem was to unify the laws of the empire, and abolish the multitude of petty customs, and of local systems of customary law. Then the Revolution in overthrowing monarchy, aristocracy, and hereditary privilege, had made changes which radically affected every department of the law. For centuries legislation and judicial influence had been in the interest of the privileged classes; the people were determined that the current should now tend in the other direction. The changes to be made were so radical, and affected so greatly every public function, that a complete reconstruction of the law was a necessity.

The history of the New York codes themselves is often appealed to as a confirmation of their theory by the advocates of codification, and sometimes, perhaps with no less reason, by its opponents. Several important reforms embodied in the New York Code of Civil Procedure have been of great public benefit, and have been widely adopted. The benefit of these reforms is an entirely different question from that of the codification of the entire law of civil procedure, but their successful operation and wide adoption are constantly urged as triumphs for codification. Connecticut, for instance, is frequently referred to as a code State, but this is entirely misleading. Connecticut has

adopted the reformed system of pleading, and has abolished the separate jurisdiction of equity, but it was done by the adoption of a brief statute of thirty-four sections. The general rules of practice continue to be, as they have always been, entrusted to the wise discretion of the courts, guided by a few simple rules. Connecticut lawyers would not tolerate the thought of exchanging their simple, flexible practice for the endless detail and ironclad inflexibility of the large volumes which regulate practice in New York. The same thing is true of the other States. Only a very few have adopted the New York Code of Procedure, or anything like it, although nearly all have followed its lead in making certain reforms.

The New York legislature has for more than a generation been constantly amending the Procedure Code; several times the amendments have been so numerous and important that the whole code has been re-enacted in its revised form. The most radical revision, made principally by Mr. Montgomery Throop, has so changed the original that Mr. Field's friends prefer to call it the Throop code. Every New York court has spent much time in trying to construe the shifting text of the code. I believe it is literally true that more litigation is had about practice every year in New York than Connecticut has had during her whole legal history. In 1844 Howard's Practice Reports, devoted almost entirely to reporting judicial interpretations of the code, began publication, and in thirty years filled seventy volumes. In 1882 another series, the New York Civil Procedure Reports began, and has already reached sixteen volumes. If a New York lawyer should have bought and preserved every successive edition of the Procedure Code, and the reports which deal with its construction, even without adding the numerous text-books which have added their testimony to "the simplicity of a codified procedure," he would have a good-sized library; and this upon a topic which in other jurisdictions has been the subject of little legislation, and less litigation. The formidable array of Procedure Reports, existing in New York alone, and covering almost identically the time during which the code has been in use, seems a most ludicrous and significant result of the determination to adopt a code, and thereby abolish judge-made law.

As to the Civil Code itself, which includes the substantial law of personal and proprietary rights, it has as yet been adopted in only two jurisdictions, California and Dakota. The reasons why a new State, whose jurisprudence is only half established, should find advantage in a complete adoption of a system built up from the long experience of an older State, are evident enough.

In New York itself the Field Code has been the subject of the most searching and destructive criticism. The New York City Bar Association has several times entrusted the examination of specific chapters to committees of prominent lawyers, and their reports have shown that the chapters examined contained many inaccuracies and many ambiguities.

Professor Theodore W. Dwight made such an examination of the chapter on "Servitudes" in the columns of the Albany *Law Journal*. This chapter begins by enumerating, in seventeen numbered sections, the exact rights which the owner of one piece of land, by virtue of such ownership, may have in the land of another, consistently with the general title of such other person. Prof. Dwight points out many rights which are totally omitted from this enumeration, including such important and frequently exercised ones as the right to have an adjoining proprietor keep back to a certain building line, build no factory, saloon, or other objectionable structure, or otherwise restrict his rights in building, and the right to maintain projections, such as eaves, blinds, signs, etc., over another's land.

The code then specifies, in seven sections, the rights which one may thus hold in another's land, not depending upon his ownership of other land. Among the omissions detected in this enumeration is the right to maintain telegraph or other poles and wires across another's land, upon which all our systems of communication depend; and, more surprising still, the right of the public to travel upon or otherwise occupy such portions of land as are dedicated for street, parks, etc., is totally omitted, not only from this chapter, but from the Code. Prof. Dwight then very effectively assails many of the other sections of this chapter.

So effective a blow was dealt to the Civil Code by this critical examination of separate chapters, that when the Legislature of

1882 passed the code, they accompanied it by a resolution appointing a committee to draft amendments for report to the next Assembly.

The editor of the Albany *Law Journal*, one of the most stalwart champions of the Code, in replying to Prof. Dwight's Article, quotes as remedying the omissions pointed out, § 2003 of the Code, which is as follows. "All statutes, rules, and laws, heretofore in force in this State, inconsistent with the provisions of this Code, or repealed or re-enacted therein, are hereby repealed or abrogated. . . . . If there is any existing rule of law omitted from this Code, and not inconsistent therewith, it continues to exist in the same form in which it now exists."

It would seem the natural supposition that a precise enumeration, by number, of the rights of a certain kind which may exist, would imply an exclusion of all others; and this has long been the rule for the construction of written instruments. But if this be not so, and if the section quoted be applicable to supply the omission, is not the appeal to this section destructive of the whole argument for the code?

If the code is not to be complete and certain, the reason for its existence ceases. If its rules are to be compared with all existing rules of law to determine whether or not the two rules are consistent, and to the uncertainty, voluminousness, and inaccessibility, which are alleged to be the vices of the common law, is to be added the delicate task of deciding upon the consistency of every rule with that of the code, and if all that passes this scrutiny is still to be the law of the State, have not the expected benefits of codification disappeared?

Such criticisms as those of Prof. Dwight have not been made for the purpose of discrediting the remarkable skill which Mr. Field has shown, nor of disputing his preëminent fitness for the work of codification, if such work is to be done by any one. Mr. Field stands too high in the estimation of jurists, not only in America, but throughout the world, to be the object of personal attack or criticism.

The argument is rather like this: if so eminent a student of legal philosophy, and so skillful a draftsman, cannot condense the common law into statements which are clear, accurate, and

comprehensive enough to stand a searching criticism, line by line, such as would be given to it in its actual application to business and litigation, who will hereafter have confidence enough in his own powers, or what legislature will venture to name a commission, to attempt the task?

The whole project of codification seems to the great majority of lawyers visionary and impracticable; to threaten doubt and the possibility of misconstruction to the most unquestioned and elementary rules of law; to involve the shaking of the firm and long established foundations of public order and private right, in the vain hope of supplanting them by the artificial creation of a day.

EPAPHRODITUS PECK.

Article IV.—THE ART OF LIFE: THE CONCLUSIONS OF A LOOKER-ON.

By Paul Siegvolk.

I once read (I know not where) these two lines, purporting to be translated from one of Goethe's writings:

> "The art of life is easily attained;
> Trust in yourself, and you the whole have gained."

Unlike most oracular maxims they express more than a partial truth: but like many others this one presupposes some practical sagacity to comprehend its full meaning. What should be one's chief purpose in life,—what the art to accomplish it? What is meant by trusting in one's self, in the pursuit of it?

When a virile man has arrived at some degree of maturity of his faculties, if he be self-possessed, he naturally asks himself, What am I? Wherefore am I here? How am I related to the rest of mankind? What are my necessities, limitations, and capabilities? What must I do, or leave undone? What can I do? What may I not do? What should be the main endeavor I ought to set before me to accomplish the object of my creation, so far as I can comprehend it? By what method can I best put myself in the way of most effectively bringing my powers to bear in the pursuit of what I shall aim at?

Each individual having a character and circumstances largely peculiar to himself—by the ancients often reckoned as fate—necessarily, self-study is essential to judicious self-management. Self-development is the first law of intellectual being. The body ordinarily grows to its normal shape and stature without much contrived or factitious aid. Nature usually takes care of that; and we shall need to do little else than to follow her common promptings,—giving her a fair chance, and thwarting her no more than social exigencies compel. With the mind, however, the case is different. Here the freedom of choice is greater. Although we have many limitations, natural and artificial, yet within their boundaries the area is vast, and the option to occupy is largely left to ourselves. Upon our own

election, to a great degree, depends the result. The peculiar duty of each man to himself being self-development, from the necessity of the case, he must find within himself the arbiter of his destiny. Self-development is the art of life, and self-trust is the key to self-development. Position, place, power, reputation, popularity, fame, are but the modes of expression of self.

The thing to do is, to work out into external act one's theory of self, as one of the forces, or an atom among the forces, of the moral world. How shall this be fairly done, if one do not trust in himself? To do it otherwise is to be a puppet. Only in this way can man be really a free agent, or work automatically. If he trust in himself he has a fixed centre of motion, about which he may always revolve: hence he shall have consistency; and, if possessed of genius, perhaps evolutionary, as well as expanding, growth. If he make his way, his path will be suited to his capabilities, and his opportunities. His life will be simple and sincere; always building upon its own foundation. But if he do not trust in himself, he will be like a disabled ship that has lost her reckoning, or the anchor of which is wanting or useless. He will be at the mercy of the winds and waves of opinion. He will be the victim of circumstances,—variable as the moon, while his conduct will lack continuity or coherence. He will have no mental quietude,—no repose of character. Lacking self-poise his equilibrium will be always doubtful. Trusting in others, or drifting with the popular current, or moved by chance or external designing influence, he will be false to himself and to every one around him. You cannot count upon him until you know from what quarter the strongest external force shall be brought to bear upon his vacillating centre. Day by day he will grow more cowardly, more doubtful of himself, and indeed of everything else. While self-trust makes the character stronger, the want of it makes one weaker and weaker, until all manliness fades out of the composition.

This infirmity runs contrary to the true order of nature. The dispositions and capacities, as well as surroundings, of men are fortunately various: I say fortunately since, among them all, by such means, events may be viewed on every side, —through divers *media*,—resulting in that lauded popular

wisdom which keeps the moral world progressing in its true course. When men are so feeble that they rely upon others instead of themselves, the best object of their existence, as affecting the race, is not attained; and except as slaves, to hew wood and draw water, they might as well not have been born. Besides this debility defeats itself. Although it is the resource of weakness, cowardice, or indolence, yet gradually it increases each one of these, until finally self-action becomes painful; while mere obedience to the will of others may bring satiety, disgust, and perhaps despair, to those worthy of better lives.

Beware of placing unlimited confidence in others. There are sometimes—though rarely—tried men and women in whom we may trust widely in some matters; but one should never quite let the cord, by which to hold them in check, pass out of his hand. It is like riding on horseback; the man who wholly trusts his horse surely sometimes gets a fall. In some exigencies the most absolute confidence in others is a special merit: but these cases are exceptional and prove the rule in a double way. Besides the fact of such recognition assuming the existence of a rule, they are striking instances of trusting in one's own judgment of the special fitness of another to encounter a particular emergency.

So also one should equally avoid the mistake, and miserable policy, of too much distrusting others. As a man should be slow to distrust his own power to accomplish what he undertakes, yet may well doubt the extent of his skill and knowledge; so on the contrary, while he may, and should be, wary of putting all his faith in the strength and will of others to aid him, he may still often be justified in thoroughly confiding in their skill or knowledge.

It is a good practical rule to trust in others only by degrees, —little by little,—letting confidence, if it may, grow by proof and experience. One may treat those in whom he thus confides, as a judicious man deals with his memory. He may trust that faculty a good deal experimentally, and it will generally grow in strength by such indulgent treatment; but when it plays him a trick, and fails him in an emergency, he will learn its fallibility, and be cautious how he again entrusts important matters to its keeping alone, without some artificial ally.

Assuredly one can do but little in this world without great confidence in one's ability to accomplish what is undertaken. The faint-hearted proverbially fail, irrespective of means and opportunities. Indeed mere physical courage often seems to lack the spirit and fire necessary for difficult achievement. Yet is nothing so sure to involve defeat of purpose and waste of life as excessive self-confidence, without discipline of faculties and recognition of mortal limitations, in respect to ability, circumstance, and time.

To begin with, one should push his energies chiefly towards such practical aims and purposes as he may reasonably hope to accomplish. More than that is wasteful or slothful.

How large a portion of life is often consumed in finding out what one may do, and in training the natural powers to adapt them to its performance! And even after careful examination of what is within the scope of our capacity, how comparatively little do we find it reasonable to expect we may do in one brief life!

It is good, as early as practicable in one's career, after having mastered and become familiar with any process,—in order to avoid waste of power and capacity,—to employ others to do all that part of our work they can do as well. Thereby we give ourselves a greater latitude of time and energy for deliberate work in the higher special field we shall have assigned to ourselves; besides lifting ourselves out of the ditch of routine and opening our eyes to a broader expanse before us.

But the chief consolation of the ambitious lover of mankind lies in the fact that as he can begin his work where his predecessors have laid it down, so his successors may take up his unfinished task, and push it on even beyond his extreme expectations. In other words, although the individual is but an atom, nevertheless the race is a grand perpetuity.

It cannot be too often repeated that, while the problem of life, to the thoughtful man, is primarily the conduct of self, this lies in the line of duty between ambition or desire on the one hand, and necessary limitations of ability and circumstances on the other; and that the first question for a man, as he begins to recognize his own consciousness, and his relations to other men, to ask himself is, "What is desirable for me to do?" and next, "What can I do?" and then, "What ought I to do?"

Most men drop into their places in the world, do what falls to their lot, avoid what seems harmful, eat, drink, and sleep according to custom, and are happy to live and die peacefully. There are, however, always many who feel impelled to construct their own fortunes, to create their own spheres, and to adapt themselves to their surroundings, only as modified by their own acts;—perpetually striving, so as to obtain the most and lose the least, that the opportunities of this mortal existence affords.

The art of life, dealing mostly as it does, with elements or circumstances that are either insurmountable, or are self-moving and controlling unless mastered, still presents this double problem—what to do, and what to avoid. To this must be subordinated, of course, as a limitation, what it is possible to do, and what we may escape. Herein also lies the test of the strength, as by the first two propositions are found the quality, of the man. By these elections will be involuntarily betrayed his intrinsic and native character. As the swine goes to the mire, so the eagle soars to the skies. Yet one may sometimes be set on, by education and other favorable circumstances, to work towards purity and elevation, by self-discipline and virtuous emulation, while another, by bad example, untoward events (such as early discouragement and the like) may be led to turn a deaf ear to its higher instincts, and lapse into a low condition.

It might be easy to formulate rules for another touching this subject; although they would perhaps be too general to be of much practical use. Herein, as in all disturbances of mental and moral balance, for permanent advantage, experience must be our chief teacher; and

> Therein the patient
> Must minister to himself.

Yet there are some maxims in which all seem agreed. A few may be cited:

(1.) A man cannot accomplish much unless he both determine to succeed and have confidence that he will do so. Intermediate, temporary failure need not even shake either of these states of mind;

(2.) A man should always preserve intact, even against the slightest scratch of the enamel, his self-respect. Without it he cannot compel the respect of others; and what may not be enforced in this direction seldom comes voluntarily. If he ever lose this inviolable self-regard, or prefer life to go on without it,—his ways will be steadily toward the animal rather than toward the angelic;

(3.) It should be a cardinal rule to strive always to maintain a high condition of health, both of body and mind—*mens sana, etc.* To do this, no care of the person can be too great, if limited by useful labor and sensible precaution. But good health is itself the safest, and perhaps only, protection against insidious indulgence in dubious experimental hygiene;

(4.) One should always work toward a distinct purpose: either in seeking to accomplish something outside—whatever may be the best practically attainable—or in training, disciplining, or forming one's own character of mind or body. So also one must always keep an eye on the watch against waste; either in throwing away one's time upon vain pursuits, not needed for recreation, or giving it away to idle, empty, silly, or ungrateful people, who suck away one's vitality, or generous impulses, and leave nothing beyond an aching, or languid, vacuity, as the recompense for their selfish plundering.

In the beginning a man seems to himself to have all the world from which to choose his career; but the first time he puts his hand to the fire, or his foot to the water, he discovers the adamantine girdle of his limitations. Self-study may begin early; but it requires some maturity of mind in the student as well as guidance to be of practical value;—otherwise it will be one-sided and its result short-sighted.

A man finds within himself two opposite tendencies; one towards self-reliance and another a yearning for social sympathy or support, approbation, and ratification. As he is strong or weak, unless he invoke the aid of severe discipline, the one or the other—strength or weakness—will prevail and as it dominates perhaps distort his character.

Before the advent of Christianity the higher education of the soul led towards self-dependence. Mythology like the laws of nature was relentless in visiting the consequences of error and

folly upon the head of the offender. Nemesis gave no encouragement to the hope of pardon through repentance for misdoing. As the tree fell so it lay. Such a system contributed doubtless to make the strong stronger,—however it might tend to destroy the weak by despair. The most fit survived and flourished, while the weaker sank in the scale of humanity to become mere servile toilers, or butterfly pleasure-seekers of the hour, or to join the general throng of the wretched who quickly perish.

On the other hand Christian theology makes life more lovely by offering to the penitent believer a safe retreat from the consequences of wrong-doing. Mercy and Hope become important factors in life. These gather strength from association of men together. Social sympathy makes many burdens more easy to carry, while waiting for the benign interference of a kind Providence to take away, or modify, the penalty of sin.

The inclination of Christian times is, however, inevitably less towards self-reliance than were those of the older theologies. The ideal man,—as a self-dependent arbiter of his own destiny and fortune,—was (humanly speaking) doubtless higher, stronger, and clearer than he is under our own merciful system of Faith. There is a tendency to evolve more and more strength in the habit of looking only to self as the prime force in character, and as a relentless master with whom to settle for delinquencies. So on the other hand, faith in absolution by repentance, the habit of leaning upon others for help, and seeking their sympathy and condolence or charity, seem as steadily to lead to debility of character. For however more amiable this system may make human association, except as it elevates us by devout aspiration to live acceptably to our Divine Master, it inevitably tends to keep us gradually sinking to a level below what a true self-reliant manhood—aside from spiritual grace—ought to set before itself as its loftiest ideal. Happy are they who, by native force of character, can unite the hardy stoicism or heroic virtue of the Heathen, with the pious graces of the Christian! That indeed should be the subdivine image a man of our day ought to set before himself.

True self-conduct, apart from all outside influences, should rest primarily upon the tripod of self-knowledge, self-reverence,

and self-control. The first is hard to attain as it requires study from without as well as from within, of others as well as of ourselves, to learn one's relations to his fellow-men and to acquire knowledge of a standard to measure one's own proportions. Time and experience alone can make such study result in any thing valuable. Self-reverence will come, or delay its coming, in proportion as our higher or better nature is obeyed, or violated and abused,—wherever her promptings are high, pure, and good, and as evil inclinations are suppressed and subdued or allowed to go unchecked. It will manifest itself in many ways, both great and small;—in an unfaltering consciousness of personal worth as well as in fastidiousness in respect to personal surroundings, manners, and social intercourse. It will keep the heart, mind, and spirit clean and sweet by a gentle necessity, and this will preserve the body pure, because it is the temple of the spirit within it. Again the notion of self-reverence will make a man careful in the choice of his company, always remembering what the Latin poet (quoted by St. Paul) said,—that "evil communications corrupt good morals." But above all stands self-control—what Lowell sweetly calls "clear-eyed self-restraint." This is the key-stone of the arch of perfected character; without which all else is of little worth.

If a man have neither the opportunity nor the ambition to strive to live for others, at least he ought to live for himself—to develop the faculties and capabilities of enjoyment of which he is possessed, and to seek to reap the fruits and gather for his own gratification the flowers that grow by the wayside through life; in short to so plan his journey, and methodize his time, as neither to waste material or miss opportunity of achieving what seems to him best for himself. Alas, how few are so prudent! The mass of mankind live neither for themselves, or for others. They live and die by force of nature, without the direction of their human will—that is to say, unmoved by any vivifying consciousness of the possession of a soul. They live and die, as does the animal or the vegetable. They exist merely for the pleasure and business of the hour without any method leading upward, except as may be necessary to provide for the ordinary sequence of common events. So far as respects a plan for the conduct of the inner-life, or a theory for the

development of what spirituality is within the compass of human will or endeavor, they are as insensible as blocks of stone.

Amid these material, superficial, pleasure-seeking days, when I see so many young people around me, brought up at haphazard, with no habits of thrift, carefulness or prudence, I wonder how they will get through that battle of life, which their New England forefathers, with all their discipline and training through poverty, privation, self-dependence, and unstinted work, found to be so hard. For a time I am puzzled and confounded with the apprehension of disaster that seems to me sure to overtake them, when the conflict comes and they shall be found to be too poorly equipped for the task before them. Again I reflect there are many ways of getting through the world; and that some move smoothly and easily, although others find a more troubled transit, merely by the chances of accident. Indeed some are pulled through, some struggle through, and some are apparently kicked through; while others never reach their normal end, but drop by the wayside, seemingly born, and sent into the world, merely to keep alive the lesson that although death be peace, life is war.

ALBERT MATHEWS.

UNIVERSITY TOPICS.

CLASSICAL AND PHILOLOGICAL SOCIETY OF YALE COLLEGE.

April 29, 1890.—Professor Seymour presented a communication on the Logical Value of the Homeric Cæsura. The paper urged that the mechanical scansion of Homer was of no value except as a preparation for the exact and yet free recitation of the verses, with due regard to the sense. A student may divide into feet every verse of Homer without the slightest advantage if the work is to stop there. The art of scanning Homer does not consist in setting the ictus upon the right syllable. The cæsura determines largely the rhythm of the verse, but this is not its most important service. It often effects a contrast, indicates the true grammatical construction, and marks off what is necessary to the thought from what is merely ornamental and illustrative. The second half-verse in Homer is often subordinate and half parenthetical, but in that case it is not necessarily a mere tag or padding; it frequently contains the picturesque and poetic element, while the burden of thought is carried by the first half-verse. The grammatical construction is often closer between two successive first half-verses, than between the latter of these and the preceding second half-verse.

That the cæsura or verse-pause necessarily requires a break in the sense, as at a mark of punctuation, is a mistake. The cæsura often corresponds to a musical *hold* rather than to a musical *rest*.

Elias Loomis, LL.D.

MEMORIAL ADDRESS DELIVERED IN OSBORN HALL, APRIL 11, 1890, BY PROF. H. A. NEWTON.

The President and Fellows of Yale College have requested that, in this public place and manner, I should give an account of the life, scientific activity, and public services of our late colleague, Professor Elias Loomis. It is a pleasure to perform the duty thus laid upon me. The hours of intercourse I have had with him, and his generous confidences, are precious treasures of my life. And I hope you will find it worth your while to have turned away from other thoughts for a single hour, to listen to the account of what, during near three score years of mature life, our colleague was doing for science, and through science for man.

Elias Loomis was born in the little hamlet of Willington, Conn., August 7th, 1811. His father, the Rev. Hubbell Loomis, was pastor in that country parish from 1804 to 1828. He was a man possessed of considerable scholarship, of positive convictions, and of a willingness to follow at all hazards wherever truth and duty, as he conceived them, might lead. He had studied at Union College, in the class of 1799, though apparently he did not finish the college course with his class. He is enrolled with that class in Union College, and he also received, in 1812, the honorary degree of Master of Arts from Yale College. At a later date he went to Illinois, and there was instrumental in founding the institution which afterwards became Shurtleff College.

Although the boy inherited from his father a mathematical taste, yet his love for the languages also was shown at a very early age. At an age at which many bright boys are still struggling with the reading of English, he is reported to have been reading with ease the New Testament in the original Greek. He prepared for college almost entirely under the instruction of his father. He was, for a single winter only, at the Academy

at Monson, Mass., and for a short time at Ellington, Conn. Owing in part to feeble health he was more disposed, in those early years, to keep to his books than to roam with other boys over the Willington hills. In later life he frequently said that in his early days he never had a thought of asking what subjects he was most fond of, but studied what he was told to study.

At the age of fourteen he was examined and was admitted to Yale College, but owing to feeble health he waited another year before actually entering a class. In college he appears to have been about equally proficient in all of the studies, taking a good rank as a scholar, and maintaining it through his college course. President Porter remembers well the retiring demeanor of the young student, and his concise and often monosyllabic expressions, peculiarities which he retained through life. During his Junior and Senior years he roomed with Alfred E. Perkins whose bequest was the first large endowment of the College Library. He graduated in 1830.

A few weeks before graduation he left New Haven and entered a school, Mount Hope Institute near Baltimore, to teach mathematics, and he remained there for a year and a term. One of his classmates, the late Mr. Cone of Hartford, said that Mr. Loomis had intended to spend his life in teaching, and that it surprised him when he heard that this purpose was abandoned, and that Mr Loomis had gone, in the Autumn of 1831, to the Andover Theological Seminary with the distinct expectation of becoming a preacher. This new purpose was, however, again changed when a year later he was appointed Tutor in Yale College. A vacancy in the Tutorship occurred in the May following (1833), and while not yet twenty-two years of age he returned to New Haven and entered upon the duties of the office. Here he remained for three years and one term. In the spring of 1836 he received the appointment to the chair of Mathematics and Natural Philosophy in Western Reserve College, at Hudson, Ohio. He was allowed to spend the first year in Europe. He was, therefore, during the larger part of the year 1836–7 in Paris attending the lectures of Biot, Poisson, Arago, Dulong, Pouillet and others. He did not visit Germany because of want of money. A long series of letters

written by him at this time appeared in the Ohio Observer, and the contrast between England and France as he saw them, and the same places as seen by the tourist to-day is decidedly interesting.

He purchased in London and Paris apparatus for his professorship, and the outfit for a small observatory, and in the Autumn of 1837 began his labors at Hudson. Here he remained for seven years, maintaining with unflagging perseverance both his work in teaching and his scientific labors. In judging of this work at Hudson we must remember that he was not with perfect surroundings. He was without an assistant and without the counsel and encouragement of associates in his own branches of science. The financial troubles which culminated in this country in 1837 were peculiarly severe upon the young and struggling College. Money was almost unknown in business circles in Ohio, trade being almost entirely in barter. In this way principally was paid so much of the promised salary of $600 per annum as was not in arrears. In one of his letters he congratulates himself that all of his bills that were more than two years old had been paid. In another he says that there was not enough money in the college treasury to take him out of the state. When he left Hudson the College offered to pay at once the arrears of his salary by deeding to him some of its unimproved lands.

In 1844 he was offered, and he accepted, the office of Professor of Mathematics and Natural Philosophy in the University of New York. In this new position he undertook the preparation of a series of text books in the Mathematics, and for some years a large part of the time which he could spare from his regular college work was given to the preparation of these books.

When Professor Henry resigned his professorship at Princeton in order to accept the office of Secretary of the Smithsonian Institution, Professor Loomis was offered the vacant chair. He went to Princeton and remained there during one year, at the end of which he was induced to return again to his old place in the University of New York. Here he continued until 1860, when he was elected to the Professorship in Yale College made vacant by the death of Professor Olmsted. For

the last twenty-nine years of his life, he here labored for the College and for science, passing away on the 15th of August, 1889.

Let us look now in succession at the different lines of his activity during these fifty-six years,—four here in the tutorship and in Europe; seven at Hudson, Ohio; sixteen in New York City and Princeton; and twenty-nine in New Haven.

For the first year on returning from Andover to New Haven, he was tutor in Latin, although it seems that he might, had he chosen it, have been tutor of Mathematics. I believe that at the beginning his mind was not yet definitely turned toward the exact sciences. In his childhood he had taken specially to Greek. In college he was equally proficient in all of his studies. He is represented to have led his class at Andover in Hebrew, and now on entering the tutorship he chose to teach the Latin language and literature. During the second year he taught Mathematics, and the third year Natural Philosophy. His later success in scientific work was, I believe, in no small measure due to his earlier broad and thorough study of language.

I have made some inquiry in order to learn what it was that turned his attention and tastes toward science. One of his colleagues in the tutorship, the Rev. Dr. Davenport, says that he recollects very distinctly the first indication to his own mind that Tutor Loomis was turning his thoughts in this direction. The great meteoric shower of 1833 came early in the period of his tutorship, and the views of Professor Twining and Professor Olmsted about the astronomical character and origin of these interesting and mysterious bodies were a common topic of conversation among scientific men in the College, especially whenever Professor Olmsted was present. The tutors were accustomed to meet as a club from time to time in the tutors' rooms in turn, and Dr. Davenport well recollects the occasion when Tutor Loomis brought in a globe and discussed before the club the new theories about these bodies. Up to this time Tutor Loomis had seemed to him to have given his thoughts and study to language rather than to science.

In January, 1834, there were constituted in the Connecticut Academy of Arts and Sciences twelve committees representing the several departments of knowledge, and Tutor Loomis was

put on the Committee on Mathematics and Natural Philosophy. These are the only signs of scientific taste or activity which I have detected earlier than the autumn of 1834, after he had been a year and a term in the tutorship. From this time on to the end of his life, he gave his time and energies to several subjects that are enough distinct one from the other to make it convenient to disregard a strictly chronological account of his labors, and consider his work in each subject by itself.

A subject of which he early undertook the investigation was *Terrestrial Magnetism.* We often use the rhetorical phrase "True as the needle to the pole," but, looked at carefully, the magnetic needle is anything but constant in direction; like the weather vane on the steeple, it is ever in motion, swinging back and forth, in motions minute and slow it is true, but still always swinging. It has fitfully irregular motions;—it has motions with a daily period;—motions with an annual period; and motions whose oscillations require centuries for completion.

The *daily* motions of the magnetic needle were those which Tutor Loomis first studied. At the beginning of the second year of his tutorship he set up by the north window of his room in North College a heavy wooden block, and on it the variation compass that belongs to the College. Here for over thirteen months, he observed the position of the needle at hourly intervals in the day time, his observations usually being for seventeen successive hours of each day.

The results of these observations, together with a special discussion of the extraordinary cases of disturbance, were published in the American Journal of Science in 1836. No similar observations of the kind made in this country had at that time been published. So far as I am aware, none made before 1834 have since been published, except ten days observations made by Professor Bache in 1832. In fact, I know of only one or two like series of hourly observations made in Europe earlier than these by Tutor Loomis. He also at this time formed the purpose of collecting all the observations of magnetic declination that had been hitherto made in the United States, and of constructing from them a magnetic chart of the country. He appealed successfully to the Connecticut

Academy of Arts and Sciences for its sympathy and aid. The work of collecting facts was so far advanced before leaving New Haven that when he had been a few months Professor at Hudson, he forwarded to the American Journal of Science a discussion of the observations thus far obtained, and with them a map of the United States, with the lines of equal deviation of the needle drawn upon it. Two years later he published additional observations and a revised edition of this map.

These were the first published magnetic charts of the United States, and though the materials for their construction were not numerous, and in many cases those obtainable were not entirely trustworthy, yet sixteen years later, when a map was made by the United States Coast Survey from later and more numerous data, Professor Bache declared that between his own new map and that of Professor Loomis, when proper allowance had been made for the secular changes, the "*agreement was remarkable.*"

The northern end of a perfectly balanced magnetic needle turns downward, and the angle it makes with the horizon is called the magnetic *dip*. This angle is an important one, and is observed with accuracy only by using an expensive instrument, and taking unusual pains in observing. Hence only a few observations of this element were found by Professor Loomis. From these, however, he ventured to put on his first magnetic map a few lines that exhibited the amount of the *dip*.

While he was in Europe he purchased a first class dipping needle, for Western Reserve College, and at Hudson and the neighborhood in term time, and at other places in vacation, he made observations with this needle. Some of these observations were made before his second magnetic chart was published, and upon this map were now given tolerably good positions of the lines of equal magnetic dip. But he continued his observations for several years, determining the dip at over seventy stations, spread over thirteen states, each determination being the mean of from 160 to over 4,000 readings. These observations were published in several successive papers in the transactions of the American Philosophical Society at Philadelphia.

Various papers on terrestrial magnetism, in continuation of his earlier investigations, appeared in 1842, in 1844, in 1847, and in 1859, but movements in Germany, England and Russia had meanwhile been inaugurated which led to the establishment by governments of a score of well equipped magnetic observatories, and this subject passed largely out of private hands.

Closely connected with terrestrial magnetism, and to be considered with it, is the *Aurora Borealis*. In the week that covered the end of August and the beginning of September, 1859, there occurred an exceedingly brilliant display of the Northern Lights. Believing that an exhaustive discussion of a single aurora promised to do more for the promotion of science than an imperfect study of an indefinite number of them, Professor Loomis undertook at once to collect and to collate accounts of this display. A large number of such accounts were secured from North America, from Europe, from Asia, and from places in the Southern Hemisphere; especially all the reports from the Smithsonian observers and correspondents, were placed in his hands by the Secretary, Professor Henry.

These observations and the discussions of them were given to the public during the following two years, in a series of nine papers in the American Journal of Science.

Few, if any, displays on record were as remarkable as was this one for brilliancy and for geographical extent. Certainly about no aurora have there been collected so many facts. The display continued for a week. The luminous region entirely encircled the North Pole of the earth. It extended on this continent on the 2d of September as far south as Cuba, and to an unknown distance to the north. In altitude the bases of the columns of light were about fifty miles above the earth's surface, and the streamers shot up at times to a height of five hundred miles. Thus over a broad belt on both continents this large region above the lower atmosphere was filled with masses of luminous material. A display similar to this, and possibly of equal brilliancy, was at the same time witnessed in the Southern Hemisphere.

The nine papers were mainly devoted to the statements of observers. Professor Loomis, however, went on to collect

facts about other auroras, and to make inductions from the whole of the material thus brought together. He showed that there was good reason for believing that not only was this display represented by a corresponding one in the Southern Hemisphere, but that all remarkable displays in either hemisphere are accompanied by corresponding ones in the other.

He showed also that all the principal phenomena of electricity were developed during the auroral display of 1859; that light was developed in passing from one conductor to another, that heat in poor conductors, that the peculiar electric shock to the animal system, the excitement of magnetism in irons, the deflection of the magnetic needle, the decomposition of chemical solutions, each and all were produced during the Auroral storm, and evidently by its agency. There were also in America effects upon the telegraph that were entirely consistent with the assumption previously made by Walker for England, that currents of electricity moved from northeast to southwest across the country. From the observations of the motion of auroral beams, he showed that they also moved from north-northeast to south-southwest, there being thus a general correspondence in motion between the electrical currents and the motion of the beams.

When there is a special magnetic disturbance at any place, there is usually a similar one at all other neighboring places. But these disturbances do not occur at the several places at the same instant of time. Professor Loomis showed that in the United States they take place in succession as we go from northeast to southwest, the velocity of the wave of disturbance being over one hundred miles per minute. The waves of magnetic irregularities were thus connected with the electrical current and with the drifting motions of the streamers in the auroral display.

As incident to this discussion, he collected all available observations of auroras, and he deduced from them the annual number of auroras visible at each place of observation. These numbers, when written upon a chart of the Northern Hemisphere, showed that auroras were by no means equally distributed over the earth's surface. It was found that the region in which they occurred most frequently was a belt or

zone of moderate breadth and of oval form, enclosing the North Pole of the earth, and also the North Magnetic Pole. It was therefore much farther south in the Western hemisphere than in the Eastern. Along the central line of this belt there are more than eighty auroras annually, but on going either north or south from the central line of that belt the number diminishes.

In 1870 Professor Loomis published a paper of importance relating to terrestrial magnetism, in which he showed its connection and that of the aurora with spots on the sun. That the spots on the sun had periods of maximum and minimum development had long been known. Lamont had noticed a periodicity in the magnetic diurnal variations. Sabine and Wolf and Gauthier had noticed that the two periodicities were allied. The connection of the period of solar spots with conjunction and opposition of certain planets had been shown by De La Rue and Stewart. Professor Loomis undertook an exhaustive examination of the facts that tended to confirm or refute the propositions that had been advanced. He confirmed and added to the conclusions of Messrs. De La Rue and Stewart. He also brought together such facts as were relevant to the question, and he showed that the regular diurnal variation of the magnetic needle was entirely independent of the solar spots, but that those disturbances that were excessive in amount were almost exactly proportional to the spotted surface of the sun. He also showed that great disturbances of the earth's magnetism are accompanied by unusual disturbances on the sun's surface on the very day of the storm.

Various forms of periodicity in the aurora have frequently been suggested. Professor Loomis, from all available accounts of the aurora, was able to show that while in the center of the zone of greatest auroral frequency auroras might be visible nearly every night, and hence that periodicity could not easily be shown by means of numbers of auroras recorded in such places, yet that such periodicity was distinctly traceable at places where the average number seen was about twenty or twenty-five a year. The times of maxima and minima of the solar spots were seen to correspond in a remarkable manner with the maxima and minima in the frequency of auroral displays

in these middle latitudes. Also from the daily observations made by Messrs. Herrick and Bradley at New Haven during seventeen years, he concluded that auroral displays in the middle latitudes of America are generally accompanied by an unusual disturbance of the sun's surface on the very day of the aurora. The magnetism of the earth, the Aurora Borealis, and the spots on the sun, have thus all three a causal connection, and apparently that connection is closely related to the conjunctions and oppositions of certain planets.

Shortly after the publication of this memoir, Professor Lovering published his extensive catalogue of auroras. A further discussion of the periodicity of the auroras was undertaken by Professor Loomis and published in 1873. In this he made use of all the auroras recorded in Professor Lovering's catalogue. They confirmed his previous conclusions, only slight modifications being required by the new facts presented, and by their more systematic collation.

In these papers, as in most of his papers upon other subjects, Professor Loomis was ever intent upon answering the questions: What are the laws of nature? What do the phenomena teach us? To establish laws which had been already formulated by others, but which still needed confirmation, was to him equally important with the formulation and proof of laws entirely new.

Let us now turn to another important line of Professor Loomis's work,—*Astronomy.* As I have said, he was early interested in the shooting stars. In October, 1834, he read a paper before the Conn. Acad. of Arts and Sciences upon this subject, probably in substance that which was afterward published in the Am. Journal of Science. The published paper is principally a restatement of the observations made in Germany in 1823 by Brandes in concert with his pupils for determining the paths of the stars through the atmosphere, together with methods of computation. From the results of Brandes' observations, however, he deduces an argument for the cosmic character of the shooting stars. One month after reading this paper to the Connecticut Academy he engaged in similar concerted observations with Professor Twining, who was then

residing near West Point, N. Y. These were only moderately successful, but they were the first observations of the kind undertaken in America.

During the senior year of his college course there arrived at New Haven the five-inch telescope, given to the college by Mr. Sheldon Clark, constructed by Dolland. This instrument was much larger than any telescope then in the country. It was temporarily placed in the Athenæum tower, where it was mounted on castors and wheeled to the windows for use. This temporary abode it occupied, however, for over thirty years. In spite of its miserable location it was, in the decade following its instalment, a power in the development of the study of astronomy in the college. The lives and works of Barnard, and Loomis, and Mason, and Herrick, and Lyman, and Chauvenet, and Hubbard, and of other graduates of the college prove this. What rich returns for Mr. Sheldon Clark's twelve-hundred-dollar investment!

In 1835 the return of Halley's comet had been predicted, and its appearance was eagerly expected by astronomers and the public: Professor Olmsted and Tutor Loomis first in this country caught sight of the stranger, and throughout its course they noted its physical appearances. With such means as he had at command, Mr. Loomis observed the body's place, and computed from his observations the orbit.

The latitude and longitude of an observatory are constants to be early determined. These were measured by President Day for Yale College in 1811. In the summer of 1835 Tutor Loomis, with such instruments as the college possessed, a sextant and a small portable transit, made numerous observations of Polaris for latitude, and several moon culminations for longitude. From these he computed the latitude and longitude of the Athenæum tower. The longitude from Greenwich though obtained from a small number of observations, differs less than two seconds of time from our best determinations to-day.

While in Europe in 1836–37 Professor Loomis, as I have said, bought for Western Reserve College the instruments for an observatory. These were a four-inch equatorial, a transit instrument and an astronomical clock. On his return he

erected, in 1837, a small observatory at Hudson, and in September, 1838, began to use the instruments. He had no assistant, and by day had a full allotment of college work. Two hundred and sixty moon culminations and sixteen occultations observed for longitude, sixty-nine culminations of Polaris for latitude, along with observations on five comets, sufficiently extended for a computation of their orbits; these attested his activity outside of his required duties. Some years later, when the corresponding European observations were made public, he prepared an elaborate discussion of these longitude observations, and published it in *Gould's Astronomical Journal.* A sixth comet was observed by him at Hudson in 1850.

It may not seem a very large output of work in six years' time to have determined the location of the Observatory, and to have observed five comets. But we must recollect that the telegraph had not then been invented, that the exact determination of the longitude of a single point in the western country had a higher value then than it can have now, and that it could be obtained only by slow and tedious methods. These were, moreover, days of small things in astronomy in this country. At Yale College we had a telescope but not an observatory. At Williamstown an observatory had been constructed, but it was used for instruction, not for original work. At Washington Lieutenant Gilliss, and at Dorchester Mr. Bond, were commissioned by the government in 1838 to observe moon culminations in correspondence with the observers in the Wilkes exploring expedition for determining their longitude. These two prospective sets of observations, both of them under government auspices and pay, were the only signs of systematic astronomical activity in the United States outside of Hudson, when in 1838 Professor Loomis began his observing there. In his Inaugural Address he asks: "Where now is our American Observatory? Where throughout this rich and powerful nation do you find a single spot where astronomical observations are regularly and systematically made? There is no such spot." When he left Hudson in 1844 the situation was not largely changed. Mr. Bond had removed his instruments and work to Cambridge. The High School Observatory at Philadelphia had been erected and Messrs. Walker and

Kendall were using its instruments. Professor Bartlett had built the observatory at West Point, and had begun to observe there. Lieutenant Gilliss after years of excellent work in the little establishment on Capitol Hill had just finished the present Naval Observatory building at Washington, Professor Mitchel had begun to build the Cincinnati Observatory, and the Georgetown Observatory building had been erected. Professor Loomis's work at Hudson should be measured by what others were doing at the time, rather than by the larger performance of to-day.

In the summer of 1844, the year in which Professor Loomis came to New York, a new method in Astronomy had its first beginnings. The telegraph line had just been built between Baltimore and Washington, and Captain Wilkes at Baltimore compared his chronometer by telegraph with one at Washington, and so determined the difference of longitude of the two places.

Professor Bache was now Superintendent of the Coast Survey, and he determined at once to use the new method for the purposes of the survey. To Mr. Sears C. Walker was committed the direction of the work, but scarcely less important were the services of Professor Loomis, who for three campaigns had charge of the end of the lines in Jersey City and New York. Their first partially successful efforts were made in 1846, but the practical difficulties were overcome and entire success was obtained by them in 1847 and 1848. In these years the differences of longitude of Washington, Philadelphia, New York and Cambridge were thus determined with an accuracy far greater than any previous similar determination whatsoever.

The next summer, that of 1849, Professor Loomis assisted in a like work to connect Hudson, Ohio, with the eastern stations. His observations of moon culminations at Hudson were thus available equally with those made at Philadelphia, Washington, Dorchester and Cambridge for determining the absolute longitudes of Atlantic stations from Greenwich. It was not until 1852 that European astronomers began to use these telegraphic methods in measuring longitudes.

In 1850 Professor Loomis published a volume on the *Recent Progress of Astronomy, especially in the United States.* A first and a second edition were soon exhausted, and in 1856 the volume was entirely rewritten and very much enlarged. Some of the topics in these volumes were the subjects of articles communicated from time to time to the public in the *Am. Jour. Sci.*, *Harper's Magazine*, and other periodicals. Another important contribution to astronomy appeared in 1865, that is, his *Introduction to Practical Astronomy.* Eminent astronomers in England and America have expressed in the highest terms their praise of this book. Though it is now thirty-five years since its first appearance, and many treatises on the same subject, some elaborate and some elementary, have since been published, yet for an introduction to practical work I believe that a student will find this volume better than any other for his uses at the beginning of his course.

The increase of our knowledge in astronomy was, from first to last, an object of special interest to Professor Loomis. Before he left New York the income from his text-books enabled him to make to Yale College the generous offer of coming to New Haven and working in an observatory at his own charges, provided a suitable observatory should be constructed and equipped for him. Unfortunately, the college was not able, although it was greatly desirous of doing it, to avail itself of his generous offer. Near the same time he joined with public spirited citizens of New York in an effort to establish an astronomical observatory in or near that city, and for that purpose an act of incorporation was obtained from the New York State Legislature. After coming to New Haven, he always took the warmest interest in the plans of Mr. Winchester for the establishment of an observatory in connection with Yale University. His counsel and assistance have been instrumental, more than the public could know, in producing and preserving whatever of value has been developed in that observatory.

The science of *Meteorology* has, however, been that in which Professor Loomis has made the most important contributions to human knowledge.

Shortly after his graduation in 1830 and before he entered upon the tutorship, there appeared the first of a long series of papers by Mr. Redfield, of New York City, upon the theory of storms. In the last year of his tutorship there appeared also the first of a like remarkable series of papers on the same subject by Professor Espy of Philadelphia. Two rival theories were advocated by these two men, and these theories became the subject of no little discussion in scientific meetings, and in scientific journals, for a long period of years. Professor Loomis had, from their very inception, taken a warm interest in these discussions, and the subject of meteorology, and in particular its central problem the theory of storms, held in his thought and work the first place from that time to the day of his death.

In his visit to Europe the year before he went to Hudson, he purchased a set of meteorological instruments, and for several years in Hudson he steadily performed the naturally irksome task of making twice each day a complete set of meteorological observations. A few weeks after he entered upon his professorship in Hudson a tornado passed five miles from that place, and he went out immediately to examine the track and learn what facts he could that should bear upon the theory of the tornado. The results were valuable, but he was not altogether satisfied with them. They led him, however, to undertake the discussion of one of the large storms that covered the whole United States.

For this purpose he selected the storm which had occurred near the 20th of December, 1836. Sir John Herschel had recommended that hourly observations be taken by all meteorological observers on four term days in the year, that is, observations for thirty-six successive hours at each equinox and each solstice. This storm fell partly upon one of these term days. Professor Loomis set to work to collect all the meteorological observations made during the week of the storm that he could obtain from all parts of the United States, and from some stations in Canada. The discussion resulting therefrom was read in March, 1840, before the American Philosophical Society at Philadelphia.

Let us for a little while consider the amount of knowledge of the facts about storms in our possession in 1840, the date

when this memoir was read and an abstract of it published in Philadelphia. Franklin had noted the motion of storms from southwest to northeast. He said:* "Our northeast storms in North America begin first in point of time in the southwest parts, that is to say, the air in Georgia, the farthest of our colonies to the southwest, begins to move southwesterly before the air of Carolina, which is the next colony northeastward; the air of Carolina has the same motion before the air of Virginia, which lies still more northeastward; and so on northeasterly through Pennsylvania, New York, New England, etc., quite to Newfoundland." Redfield had traced several storms along the West India Islands northwesterly until about in the latitude of 30° their course was turned quite abruptly and they swept off northeasterly along the Atlantic coast toward and even past Newfoundland. Espy found some storms moving easterly or south of east from the Mississippi to the Atlantic.

Brandes had announced as a law that the wind in storms blows inward toward a center; but his law was an induction from a small number of observations. Dove had contended for a whirling motion; Redfield advanced facts to show that the winds blew in circles anti-clockwise around a center that advanced in the direction of the prevalent winds, and with him agreed Reid, Piddington and others. Espy, agreeing with Brandes, claimed that the observations in the various storms showed a centripetal motion of the winds, toward a center if the region covered by the storm was round, and toward a central line if the storm region was longer in one direction than in another. Espy's conclusions were intimately connected with his theory that in the center of the storm there was an upward motion of the air, and that the condensation of vapor into rain furnished the energy needed for the continuation of the storm. The rival theories of Redfield and Espy were in sharp contest on several points, but the main contention was around this central question: Do the winds blow in circular whirls, or do they blow in toward a center? New York State was collecting observations from the Academies. The American Philosophical Society and the Franklin Insti-

* Letter to Alexander Small, May 12, 1760.

tute, aided by an appropriation from the State of Pennsylvania, had united in an effort to learn the facts and the true theory of storms.

Under such circumstances the thorough discussion of a single violent storm was likely to add materially to our knowledge. The treatment of this storm by Professor Loomis was probably more complete than that of any previous one, and the methods which he employed were better fitted to elicit the truth than any earlier methods. But the storm was a very large one, extending from the Gulf of Mexico to an unknown distance north, and having its center apparently to the north of all the observers. The results which he was able to secure did not sustain either of the two rival theories, but rather tended to prove some features in each of them. Professor Loomis was not himself satisfied with them, and he therefore waited for another storm that should be better fitted for examination.

In the month of February, 1842, a second tornado passed over northeastern Ohio, and Professor Loomis with one of his colleagues again started out for the examination of the track. The tornado passed over a piece of woods, and hence the positions of the prostrate trees showed clearly the motion of the wind in the passing tornado, and threw much light upon the character of this kind of storm. But the tornado was a single feature of a large storm that covered the whole country, and a second storm of great intensity was also experienced in the same month.

The discussion of these two storms was now undertaken by him. The paper giving the results of that discussion was sent to Professor Bache, and read by him at the centennial meeting of the American Philosophical Society, in May, 1843, and created, as Professor Bache wrote, a great sensation. It was at the time important for the light which it threw upon the rival contending theories of Espy and of Redfield, but it was more important by far by reason of the new method of investigation then for the first time employed.

In the paper upon the storm of 1836 Professor Loomis had made some advance upon previous methods of representing the

facts about storms. But even the method he then used was entirely unfitted to give answers to the questions which meteorologists were asking. Some of those questions were stated in circulars issued by the joint committee of the American Philosophical Society and the Franklin Institute: What are the phases of the great storms of rain and snow that traverse our continent; what their shape and size; in what direction, and with what velocity do their centers move along the surface of the earth; are they round, or oblong, or irregular in shape; do they move in different directions in different seasons of the year?

The graphic representation by Professor Loomis on the map of the United States of the storm of 1836 had been a series of lines drawn joining the places where at a given hour the barometer was at its lowest point. That line would so far as the barometer was concerned mark for that hour the central line of the storm. The progress of the line from hour to hour on the map showed, quite imperfectly, how the storm had traveled. Some arrows added showed to the eye also certain facts about the movements of the air.

Professor Espy adopted and thereafter adhered to a modification of this method of representing storm phenomena, and I think meteorologists will agree with me in my opinion that Professor Espy's four Reports from 1842 to 1854 though they contained an immense accumulation of facts, were because of this radical defect of presentation almost useless to meteorological science.

In the discussion of the storms of 1842, instead of the line of minimum depression of the barometer, Professor Loomis drew on the map a series of lines of equal barometric pressure, or rather of equal deviations from the normal average pressure for each place. A series of maps representing the storm at successive intervals of twelve hours were thus constructed, upon each of which was drawn a line through all places where the barometer stood at its normal or average height. A second line was drawn through all places where the barometer stood $\frac{2}{10}$ of an inch below the normal; and other lines through points where the barometer was $\frac{4}{10}$ below, $\frac{6}{10}$ below, $\frac{8}{10}$ below, etc.; also lines were drawn through those points

where the barometer stood $\frac{2}{10}$, $\frac{4}{10}$, $\frac{6}{10}$, etc. above its normal height. The deviations of the barometric pressure from the normal were thus made prominent, and all other phenomena of the storm were regarded as related to those barometric lines. A series of colors represented respectively the places where the sky was clear, where the sky was overcast, and where rain or snow was falling. A series of lines represented the places at which the temperature was at the normal, or was 10 or 20 or 30 degrees above the normal, or below the normal. Arrows of proper direction and length represented the direction and the intensity of the winds at the different stations. These successive maps for the three or four days of the storm furnished to the eye all its phenomena in a simple and most effective manner.

You have no doubt, most of you, already recognized in this description the charts, which to-day are so common, issued by the United States Signal Service, and by weather service Bureaus in other countries. The method seems so natural that it should occur to any person who has the subject of a storm under consideration. But the greatest inventions are ofttimes the simplest, and I am inclined to believe that the introduction of this single method of representing and discussing the phenomena of a storm was the greatest of the services which our colleague rendered to science. This method is at the foundation of what is sometimes called "the new meteorology," and the paper which contains its first presentation stands forth, I am convinced, as the most important paper in the history of that science. I regret that I cannot aid my memory by quoting the exact words, but I remember distinctly what seemed to me an almost despairing expression made many years ago by one who had high responsibility in the matter of meteorological work, as he looked out upon the confused mass of observations already made, and felt unable to say in what direction progress was to be expected. With this I contrast the buoyant expressions of another officer charged with like responsibility, as he showed me, one or two decades later (in 1869), charts constructed like those of Professor Loomis, and said, "I care not for the mass of observations made in the usual form. What I want is the power and the material for

making such charts as these." These two expressions of Sir George Airy and of LeVerrier mark the progress and the direction of progress in meteorology developed by Professor Loomis's memoir.

What was his own judgment of the method at the time of its publication and its value in meteorology, can be seen from his words at the close of the memoir, which I beg permission to quote.

"It appears to me that if the course of investigations adopted with respect to the two storms of February, 1842, was systematically pursued we should soon have some settled principles in meteorology. If we could be furnished with two meteorological charts of the United States daily for one year, charts showing the state of the barometer, thermometer, winds, sky, etc., for every part of the country, it would settle forever the laws of storms. No false theory could stand against such an array of testimony. Such a set of maps would be worth more than all which has been hitherto done in meteorology. Moreover, the subject would be well nigh exhausted. But one year's observation would be needed. The storms of one year are probably but a repetition of those of the preceding. Instead then of the guerilla warfare which has been maintained for centuries with indifferent success, although at the expense of great self-devotion on the part of individual chiefs, is it not time to embark in a general meteorological crusade? A well arranged system of observations spread over the country, would accomplish more in one year, than observations at a few insulated posts, however accurate and complete, continued to the end of time. The United States are favorably situated for such an enterprise. Observations spread over a smaller territory would be inadequate, as they would not show the extent of any large storm. If we take a survey of the entire globe, we shall search in vain for more than one equal area which could be occupied by the same number of trusty observers. In Europe there is opportunity for a like organization, but with this incumbrance, that it must needs embrace several nations of different languages and governments. The United States then afford decidedly the most hopeful field for such an enterprise. Shall we hesitate to embark in it; or shall we grope timidly along as

in former years? There are but few questions of science which can be prosecuted in this country to the same advantage as in Europe. Here is one where the advantage is in our favor. Would it not be wise to devote our main strength to the reduction of this fortress? We need observers spread over the entire country at distances from each other not more than fifty miles. This would require five or six hundred observers for the United States. About half this number of registers are now kept in one shape or another, and the number by suitable efforts might probably be doubled. Supervision is needed to introduce uniformity throughout, and to render some of the registers more complete. Is not such an enterprise worthy of the American Philosophical Society? The general government has for more than twenty years done something, and has lately manifested a disposition to do more for this object. If private zeal could be more generally enlisted, the war might soon be ended, and men would cease to ridicule the idea of our being able to predict an approaching storm."

This plan of a systematic meteorological campaign was cordially seconded by Professors Bache and Peirce. At a somewhat later date the American Academy of Sciences of Boston appointed a committee, of which Professor Loomis was chairman, to urge upon the proper authorities the execution of the plan. The American Philosophical Society of Philadelphia united its voice with that of the Academy. About this time Professor Henry was made Secretary of the Smithsonian Institution. He determined to make American meteorology one of the leading subjects of investigation to be aided by the Institution. At Professor Henry's request Professor Loomis prepared a report upon the meteorology of the United States, in which he showed what advantages society might expect from the study of the phenomena of storms; what had been done in this country toward making the necessary observations, and toward deducing from them general laws; and finally, what encouragement there was to a further prosecution of the same researches. He then presented in detail a practicable plan for securing the hoped-for advantages in their fullest extent.

This plan looked to a unifying of all the work done by existing observers, a systematic supervision, a supplementing

of it by new observers at needed points, a securing of the coöperation of the British government and the Hudson's Bay Company in the regions to the north of us, and finally a thorough discussion of the observations collected. A siege of three years was contemplated. In the history of the several steps that finally led to the establishment of the United States Signal Service, this report has an important place.

The scheme laid down by Professor Loomis was in part followed out by the Institution. But the fragmentary character of the observations, the want of systematic distribution of the places of the observers, and the imperfections of the barometers, made the material collected difficult of discussion. Professor Loomis waited in hopes of some better system.

In 1854, Professor Loomis undertook a rediscussion of the storm of 1836, using the new methods introduced for treating the storms of 1842. A visit to Europe shortly after enabled him to collect a large number of observations upon a storm or series of storms that occurred in Europe about a week later than that American storm. He had long been anxious to connect, if possible, these two storms, as he said, "stepping across the Atlantic." The European and the American storms, however, not only proved to be distinct one from the other, but the discussion showed clearly that many of the laws of American storms were radically different from those of the European storms. The results of the whole discussion were published in 1859 by the Smithsonian Institution.

Upon coming to New Haven, in 1860, he commenced the collection of all the meteorological observations that had been made in New Haven and the immediate vicinity, and succeeded in finding sets which, when brought together, made up a nearly continuous record through 86 years. The results of these observations formed the subject of a memoir published by the Connecticut Academy of Arts and Sciences in 1866.

It became part of his duties in college to deliver a course of lectures upon the subject of meteorology. In preparation for these he caused to be printed in very limited numbers the outlines of a treatise upon meteorology, to be used as the basis of his series of lectures. In 1868 he developed this outline into a treatise suited to use in college classes and in private study.

This treatise, notwithstanding the rapid advances of the science during more than twenty years, is still indispensable to the student of meteorology.

The better system of observing, for which Professor Loomis had been long waiting, came when the United States Signal Service was established in 1871. The daily maps of the weather published by the Bureau were constructed essentially after the plan which Professor Loomis had, thirty years before, invented for the treatment of the storms of 1842. As soon as these maps had been been published for the two years 1872 and 1873, Professor Loomis commenced in earnest to deduce from them the lessons which they taught us respecting the nature and the phenomena of United States storms. To this investigation he gave nearly all his energies during the remaining fifteen years of his life.

For several years he employed and paid for the services of assistants whose time was given to the preparation of material for use in his studies. The aggregate cost of this assistance was of itself a very large contribution to science. Beginning in April, 1874, he presented regularly at eighteen successive meetings of the National Academy of Sciences in April and in October of each year, a paper entitled "Contributions to Meteorology." These were at first based upon the publications of the Signal Service alone, but as years went by like publications appeared in Europe that were useful for his work. These papers were published in July and January following the Academy meeting, and they regularly formed the first and leading article in eighteen successive volumes of the American Journal of Science. Gradually, one after another of his college duties were committed to others that he might give his whole strength to these investigations.

An attack of malaria interrupted the regularity of the series. His advancing years and diminishing strength warned him that the end of his investigations could not be far distant. The number of hours in which he could work each day was slowly diminishing. Five more papers followed at somewhat less regular intervals.

In 1884 he began a revision of the whole series of papers. They had been presented without much regard to systematic

order in the subjects investigated, and new material had accumulated from time to time, so that a thorough, systematic revision seemed absolutely necessary.

In 1885 he presented to the Academy of Sciences the first chapter of this revision, in which he discussed the areas of low pressure—their form, their size, their motions, and the phenomena attending them. Two years later, in 1887, the second chapter of the revision appeared, in which he discussed the areas of high pressure, their form, magnitude, direction and velocity of movement, and their relation to areas of low pressure. Gradually his physical strength was failing, though his mind was as bright and clear as ever. To this work, the only work which he was now doing, he was able to give two or three hours a day. Anxiously he husbanded his strength, slowly and painfully preparing the diagrams and the tables for the third chapter upon rain areas, the phenomena of rainfall in its connection with areas of low pressure, and the varied phenomena of unusual rainfall. "I see," he said to a friend, "not the end of this subject, but where I must stop. I hope I shall have strength to finish this work, and then I shall be ready to die."

This third and finishing chapter was finally passed through the printer's hands and some advance copies distributed to correspondents abroad in the summer months of 1889. His work upon the theory of storms he felt was finished. As he paid the bill of the printer, he said to him: "When I return at the close of the vacation I expect to put into your hands for printing a new edition of the *Loomis Genealogy*." Before the close of the vacation he died.

These three chapters of his revised edition of *Contributions to Meteorology* constitute the full and ripe fruitage of his work in his favorite science. They will for a long time to come be the basis of facts by which writers in theoretical meteorology must test their formulas. They cover all the important points taken up in the twenty-three earlier memoirs,—with one important exception, the relation of mountain observations to those made on the plains below. The laws connecting these two are not yet clearly indicated; much remains to be learned about them, and they are of the utmost importance in theoret-

ical meteorology. He felt most deeply the backward steps taken by the United States Signal Service when mountain observations and the publication of the *International Bulletin* were discontinued. "The National Academy of Sciences," he said, "ought at once to take up the subject and use all its influence to secure the restoration of these two services."

Professor Loomis at various times studied certain other questions in physics and astronomy that were more or less allied with the subjects to which he gave the principal part of his time, and he published the results of his studies. He made a series of experiments on currents of electricity generated by a plate of zinc buried in the earth. He examined the electrical phenomena in certain houses in New York; the curious phenomena of optical moving figures; the vibrations sent out from waterfalls as the water flows over certain dams; the orbits of the satellites of Uranus; the temperature of the planets; the variations of light of the stars η Argus and Algol; and the comet of 1861.

The subject of family *Genealogy* has a peculiar fascination to many minds. It would be an interesting study to determine practically by a collection of facts what are the elements in a man's character which lead him to engage in this peculiar study. Certain it is that men of most diverse disposition are led into it. I should not have thought it likely that Professor Loomis would have taken up the subject very seriously. Others have expressed to me the same thought, and he himself says that he did not think it strange that others should be surprised at his devoting so much time to this subject, for he was surprised at it himself. He became interested in the subject early in life, and that interest remained unbroken to his last days. For near forty years before his first publication he collected from time to time materials for a list of the descendants of his ancestor, Joseph Loomis, who came from Braintree, England, in the year 1638, and settled in Windsor, Connecticut, in 1639. In each of his four visits to Europe he extended his inquiries to his ancestor's earlier history in England. The materials thus collected were put in type in 1870. He published a list containing 4,340 descendants of

Joseph Loomis bearing the Loomis name. He regarded it as entirely provisional, printed to help himself in making further researches, and to excite interest in others of the name, who would thus be led to give additional information, or correction of errors.

Finding that to a limited extent only could he hope by correspondence to gain the information desired, he now undertook in his vacations to canvass the country by personal visits. He collected lists of names from every available source, from catalogues of every description, from city directories, county directories, county maps and county tax lists, and he compiled from these sources lists of all the Loomis names he could find. Arranging these names by counties he undertook to visit each family personally. In this way he made a pretty thorough canvass of every part of New England and New York State, of nearly every part of New Jersey and Pennsylvania, of the northern part of Ohio, and of some of the western cities.

After five years of these researches he published the second edition of the *Loomis Genealogy*, in which were given 8,686 names of persons that bore the Loomis name, descendants of Joseph Loomis in the male branches.

Five years later, in 1880, Professor Loomis printed in two additional volumes a provisional list of 19,000 descendants of Joseph Loomis in the female branches. Large as was this list, he did not regard it as more than a first outline of a census of the descendants of the original emigrant, and he hoped in the near future to publish an additional volume. For this he has left in manuscript many corrections and large additions that will be of use to the future Loomis Genealogist.

Am I tarrying too long upon the vacation work of Professor Loomis? If so, I plead on this occasion that among these direct descendants of Joseph Loomis there were enrolled more than 200 graduates of Yale College, and nearly 100 more of our graduates have married members of this numerous family.

Professor Loomis was doubtless more widely known as the author of mathematical text-books than as a worker in new fields in science. Shortly after coming to New York, he prepared a text-book in Algebra. The market was ready for

a good book of this kind, and the work prepared for it was a good one. It was followed the next year by a Geometry. This was an attempt, and if judged by its reception and sale, it was a successful attempt to combine in a school-book the rigid demonstrations of Euclid with the courses of thought in Legendre and in modern science. The task is one of peculiar difficulty, as the existence and activities of the English Society for the Improvement of Geometric Teaching now for near twenty years illustrates. Other books followed the Geometry from year to year, the whole forming a connected series from Arithmetic upward, so that the list of his works finally numbered near twenty volumes. His experience in teaching, his rare skill in language, his clear conception of what was important, and his unwearied painstaking, combined to produce text-books which met the wants of teachers. About 600,000 volumes have been sold, benefiting the schools and colleges, and bringing to the author a liberal and well merited pecuniary return.

We ought not on this academic occasion to omit to speak of the teacher. College graduates who have been under his instruction will probably retain a more positive impression of the personal traits and the character of Professor Loomis than of most of their other teachers. His crisp sentences, lucid thought, exactness of language and steadiness of requirement, more than made up for any apparent coldness and real reserve. These characteristics of his riper years were peculiar to him from the beginning of his life as a teacher. During his tutorship he was thought to be strict as a disciplinarian, and this may have unfavorably affected his influence with some members of the class of 1837, of which he was tutor. It was not so with all of them. Some of you will recall what was said by a member of that class as he came to Commencement a few years since, occupying at the time the highest office which a lawyer in the line of his profession can in this country secure:—"If I have been successful in life," said Chief Justice Waite, "I owe that success to the influence of Tutor Loomis more than to any other cause whatever."

There was in Professor Loomis so much of reserve that to many persons he seemed cold and without interest in the lives of others. But this was mainly due to appearances only.

The tear would at times come unbidden to his eye. His correspondence with his classmates in the years immediately following graduation shows warm interest in all that concerned them. From Hudson he wrote often to Mr. Herrick, and complained much of isolation, but more especially of isolation from scientific companions and books.

In 1840 he married Miss Julia E. Upson, of Talmadge, Ohio, a lady about whom those who knew her have spoken to me only in terms of praise, and for whose memory Professor Loomis cherished a tender reverence. She died in 1854, leaving two sons. From this time Professor Loomis lived in apartments, surrounded by his books and devoted to his studies. His sons after passing their school and college days went to their own fields of work. During many years of his New Haven life he was unable to receive visitors in the evening. He made very few new friends, and one after another of his old ones passed away. To his work he was able to give undivided his time and his strength. His mind did not seem to require the excitement of social intercourse for its full and healthful activity. Isolated though he was there was in him no trace whatever of selfish or morbid feeling. In council his advice was always marked by his clear judgment of what was important, and at the same time what was practicable. Whatever he himself had the right to decide was promptly decided by a yes or a no, and few persons cared to question the finality of his decision. But when his colleagues, or others, had the right to decide he accepted their decision without questioning or subsequent murmur. Upon being told that his letters to Mr. Herrick had come to the College Library, and that he could, if he chose, examine them and see whether there were among them any which he would prefer not to leave in this *quasi* public place, he promptly replied: "No, I never wrote a letter which I should be ashamed to see published."

After coming to New York he had a generous income from his books, besides his salary as professor. The amount he saved from his income was carefully and prudently invested, and before his death the savings with their accumulations were a large estate, how large only he and his banker knew.

One of his college classmates told me that Mr. Loomis left college with the definitely expressed purpose that the world should be better for his living in it. The central proposition in his Inaugural Address at Hudson in 1838 was: "That it is essential to the best interests of society that there should be a certain class of men devoted exclusively to the cultivation of abstract science without any regard to its practical applications; and consequently that such men instead of being a dead weight upon society are to be ranked among the greatest benefactors of their race." He chose this for his principal work for man, and he steadily kept to the chosen work. To establish an Astronomical Observatory had been through life a cherished object. He entered into and aided heartily the plans of Mr. Winchester, both before and after Mr. Winchester asked his Trustees to transfer his magnificent endowment to the University. Professor Loomis looked forward to a large institution in the future on the observatory site. To endow this public service, after making liberal provision for his two sons, he bequeathed his estate. The income from more than $300,000 will eventually be available to continue the work of his life. With clear judgment of what was most important he limited the use of that income to the payment of salaries of persons whose time should be exclusively devoted to the making of observations for the promotion of the science of astronomy, or to the reduction of astronomical observations, and to defraying the expenses of publication. He knew that if he provided observers, other benefactors would furnish buildings, and instruments, and the costs of supervision and maintenance.

A university has an organic life, with its past and its future. The wealth of a university consists mainly in its men;—not so much in those men who are its active members now, as in those who have lived themselves into its life in the past, and have made it a home of scholarship, of truth and of devotion to duty, a place fit for the development of the nobler elements of character. The life and work of Elias Loomis form no mean portion of the wealth of Yale University.

ALUMNI ASSOCIATIONS:* RECENT ACTION OF THE YALE ALUMNI ASSOCIATION OF NEW YORK CITY.

The growth of Associations of all kinds within the last twenty years is one of the marked features of life in the United States.

Twenty years ago the largest cities in the Union with difficulty supported a few social Clubs, which of all forms of association are the easiest to maintain. To-day prosperous Clubs are found in every city of moderate size; and, in the great centres, their rapid multiplication, the sumptuous buildings which they can afford to occupy, and the long lists of candidates, who at the doors of many of them await opportunities for admission, testify to the increasing importance with which they are everywhere regarded. Nor is the tendency less marked towards association for other purposes than mere social enjoyment. Science, literature, art, education, culture, research, pleasure, even the acquisition of money—each and all find their devotees banding together for mutual help and encouragement. Individualism wanes, societies of all kinds spring up and prosper.

Another noticeable thing at the present time is that men do not limit themselves to joining a single Club, but they join several; and wherever there is an association of those who sympathize with them in any special taste or pursuit, they recognize the value to themselves of an opportunity of meeting and coöperating with those who share with them a common interest. So the same person may belong to a Club devoted to scientific research, and to one whose members are interested in some special kind of sport; to an association for the preservation of forests and game, and to one whose attraction is that the ancestors of its members fought by the side of his ancestors in the war of the Revolution. Nor are mere geographical bonds unheeded; the New England Society, the Southern Society, the Society of the Sons of Ohio, are only examples of the wide-spread desire which men have to unite with others on every common ground.

* Yale Alumni Associations.—Albany;—Boston;—Buffalo;—California;—Central New York;—Central and Western Massachusetts;—Chicago;—Cincinnati;—Cleveland;—Colorado;—Denver;—Essex County (New Jersey);—Fairfield County (Connecticut);—Hartford;—Indianapolis;—Louisville;—Meriden;—Minneapolis;—New Haven;—New York City;—Orange (New Jersey);—Philadelphia;—Providence;—Rhode Island;—San Francisco;—South Western;—Springfield;—St. Louis;—St. Paul;—Troy;—Utah;—Utica;—Washington;—Wilkes-Barre;—Worcester;—Wyoming Valley.

The interest which man now takes in his fellow man, in all the relations of life, is a characteristic of the age. Often unrecognized, and frequently only unconsciously expressed, it is none the less real. Schemes for social improvement, for the elevation of the masses, for common development of all kinds, are the topics which everywhere enlist general interest and attention, even though they may not in all cases incite to action.

It is true that there is a lamentable failure as yet, especially among our educated men, to take a proper interest in public affairs, yet there is certainly more attention paid now to political questions that affect the national prosperity, than was the case a few years ago; and though the efforts at reform which have been thus far made have been only spasmodic, yet we may hope that this increased interest manifested by individuals is the prelude to more sustained and concerted action.

It is not strange, then, that this general movement has affected our Universities and Colleges. It led first to the establishment of Clubs and Societies of all kinds among the students themselves; and now, in all the larger cities of the Union, associations of the graduates of the different colleges have been formed. These Alumni Associations are a natural, if not a necessary, outgrowth of the rising spirit of fraternity, and of the appreciation of the duty of helpfulness. They are the outgrowth of that feeling which recognizes the sacredness of all human bonds.

This being the case, it is our special purpose—in writing at the present time—to emphasize what seems to us very important, that these Associations should respond in action to the motive which gave them existence. If they do this, they can accomplish much for their *alma mater*, and for the cause of the higher education; since it is more than the work of isolated individuals; those who thus recognize this duty are associated with a great number of others for the special purpose of united action.

Now there are, as we understand, in different parts of the United States, between thirty and forty Associations of the Yale alumni. Some of them, like that of Fairfield County (Connecticut), are regularly incorporated. A glance at the constitutions of these various Associations shows that the professed object of every one of them is the performance of the very duty, of which we have just spoken. For instance, the object of the Chicago Association, according to Article II. of its constitution, is "the promotion of the interests of Yale College." The object of the

Fairfield County Association (Art. II.) is "the furtherance of the cause of education in connection with Yale University, including the support and maintenance, if funds be provided for that purpose, of scholarships in the University and in preparatory schools, and in general to promote the advancement of the interests of said University, or of any one or more of its departments." The object of the Association of New York City (Art. I.) is "to promote the interests of the University."

It is encouraging to find that the different Associations all over the country are beginning to show their interest by something more than words—by appropriate action. The Fairfield Association has taken a leading part in the establishment of the Department of Music, which has been so happily inaugurated during the present year, and is working with the energy which characterizes its members in the matter of the better endowment of the Medical School.

The New York City Association in 1886 placed upon its records the following standing order:

"*Resolved*, That the Executive Committee determine and report to the May meeting of each year, what amount of the funds of the Association may properly be appropriated and paid over for the uses of the University, and that the adoption of this resolution be printed among the standing orders of the Association."

In 1889, and again in 1890, it paid over to the treasurer of the University, for the general purposes of the institution, the sum of $500, and it is expected that this contribution will be regularly continued.

A University Fund has also, within the past month, been established by the New York City Association for the receipt of contributions, large or small, which are also to be applied for the general purposes of the University.

But these are only beginnings. The practice of continual and substantial recognition of the needs of the University, and the exhibition of a desire among the Alumni to add to its facilities and means of usefulness, it is to be hoped will become more general and be considered more binding.

The promotion of social feeling, the revival and maintenance of college friendships, the helpfulness extended to younger graduates as they pass out into life—all these are worthy objects of association—but they must not obscure the obligation which lies at the foundation of the common tie. The deep debt of grati-

tude which every college graduate owes to his *alma mater* should not expend itself in mere sentiment. One of the enduring convictions of life, strengthened by reflection, with age and with experience, is that the maintenance of institutions for the higher education is one of our national safeguards for all coming time. The sending out by them, year by year, of trained and earnest thinkers, of men habituated to value culture and the associations which it brings, is an assurance of an enduring and self-perpetuating tendency towards all that is highest and best, which cannot fail to be of the greatest importance to the whole country.

It is for reasons such as these that the graduates of Yale, while they look to their own *alma mater* with reverence and with love, do it with no feeling of narrowness, or exclusiveness of any kind. They can never forget that the traditions in which they were educated, in their old home under the elms, are of warm sympathy with every other institution of learning—even the smallest and most humble. They take pride in remembering that one of the most cherished distinctions of Yale has ever been that her convictions of the refining and elevating influences of academic life have led her to assist in the founding of other similar institutions all over the land, till now she is known as the "Mother of Colleges." But the interest which Yale graduates have been in this way taught to take in the successes of other institutions leads them to value their own University the more. They know that the influence of Yale has ever been manly, scholarly, Christian. They look upon Yale as one of the great conservative forces of the country.

We feel, then, that the imperative duty of the hour for its Alumni is to enlarge this influence and render it more potent. To whom can the University look with more confidence than to its Alumni who have experienced its pleasures, who have been strengthened by its discipline, and who look forward to its good offices for their sons. To whom more appropriately can the University turn than to its Associated Alumni? Here, if anywhere, is the spirit of fraternity kept alive. Here more than anywhere else is the fact of mutual dependence between the college and its sons most vividly felt.

If the examples of recognition of the duty of helpfulness, which we have above cited, are to be followed, as we cannot but think they surely will be, the University will be able to respond more adequately to the constantly increasing demands which are made upon it.

If each Alumni Association, also, will make it a part of its work, in accordance with the declaration of its constitution—to advance in some specific way the interests of the University, how potent for good may be the combined action of these thirty or forty Associations! One may maintain scholarships or fellowships to be filled perhaps by deserving candidates from their own vicinage. Another may contribute a stated sum to the general purposes of the University or some of its departments. A third may assist some inadequately endowed chair of instruction. Still another may contribute a fixed amount for the enlargement of the library. All may stimulate the habit of giving, and afford opportunities for the grateful recognition of past obligations, and for fulfilling the still higher obligations which both individuals and the University owe to the future.

FREDERIC H. BETTS.

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VII. Alumni Associations: Recent Action of the Yale Alumni Association of New York City.
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